



# Los Angeles County Department of Regional Planning

*Planning for the Challenges Ahead*



**Amy J. Bodek, AICP**  
Director of Regional Planning

**Dennis Slavin**  
Chief Deputy Director,  
Regional Planning

## SECOND SUPPLEMENTAL MEMO TO THE REGIONAL PLANNING COMMISSION

---

DATE ISSUED:	March 22, 2022	
MEETING DATE:	3/23/2022	AGENDA 5 ITEM:
PROJECT NUMBER:	2021-002931 (1-5)	
PROJECT NAME:	Wireless Facility Ordinance	
PLAN NUMBER(S):	Advance Planning Case No. RPPL2021007939	
SUPERVISORIAL DISTRICT:	1-5	
PROJECT LOCATION:	Countywide	
PROJECT PLANNER:	Alyson Stewart, Senior Regional Planner ordinance@planning.lacounty.gov	

---

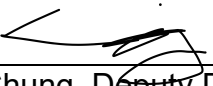
This item is the Wireless Facility Ordinance, which is an amendment to Title 22 (Planning and Zoning) of the Los Angeles County Code to establish land use regulations for wireless communication facilities.

Since the posting of the first supplemental memo on March 17, 2022, staff received additional materials relating to the ordinance in the form of comment letters, which are attached here.

- Two additional letters were received in support of the project.
- Three additional letters were received suggesting language changes.
- An additional 14 letters and e-mails were received in opposition of the project, which included local residents and community groups.

---

Memo Reviewed By: A. Bruce Durbin  
Bruce Durbin, Supervising Regional Planner

Memo Approved By:   
Connie Chung, Deputy Director

---





---

## Los Angeles County Office of Education

---

Serving Students ■ Supporting Communities ■ Leading Educators

March 21, 2022

Debra Duardo, M.S.W., Ed.D.  
Superintendent

*Via email: [astewart@planning.lacounty.gov](mailto:astewart@planning.lacounty.gov)*

Los Angeles County  
Board of Education

Betty Forrester  
President

James Cross  
Vice President

Judy Abdo

Yvonne Chan

R. Michael Dutton

Stanley L. Johnson, Jr.

Monte E. Perez

Alyson Steward  
Project Manager  
Los Angeles County Department of Regional Planning  
320 West Temple Street  
Los Angeles, CA 90012

Re: Support of Los Angeles County Wireless Facility Ordinance

Dear Ms. Steward:

The Los Angeles County Office of Education (LACOE) is in full support of the Los Angeles County Department of Regional Planning's Wireless Facility Ordinance (Title 22 Ordinance + Design Guidelines). This planning aligns with Phase One of the Los Angeles County Board of Supervisors' motion on Bridging the Digital Divide for our students and families in Los Angeles County. As the pandemic exacerbated the need for students to be connected to the internet, hundreds of thousands of MiFi hotspots were deployed by school districts to connect students to their teachers to continue their education through distance learning. Hotspots offered a temporary band-aid solution and do not provide the long term broadband connectivity needed for ongoing essential services.

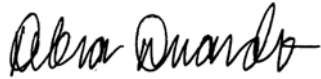
The Wireless Facility Ordinance provides Los Angeles County the opportunity to leverage existing resources to deploy broadband infrastructure, which is essential to accessing education, employment opportunities, healthcare services, financial resources, and commerce. Utilizing the County as a trusted partner to service our communities will provide internet access as a necessity standard for homes, very similar to electricity and running water. Small cell 5G technology is being deployed across the nation by commercial, for-profit entities whereas the County is deploying the technology as a trusted partner to the community.

Los Angeles County and its' vast number of departments are committed to public service through innovative solutions and best work practices in an ever-changing technology landscape. Leveraging all of our resources for education and community helps to ensure digital equity. By creating access to broadband connectivity, we can collectively Delete the Divide and uplift families who need our support.

Ms. Steward – Wireless Facility Ordinance  
March 21, 2022  
Page 2

If you have any questions, please feel free to contact our LACOE representatives, Mr. Jose Gonzalez, Chief Technology Officer, at [Gonzalez\\_jr@laoe.edu](mailto:Gonzalez_jr@laoe.edu) and Ms. Sonia Hooks, Interim Assistant Director, at [hooks\\_sonia@laoe.edu](mailto:hooks_sonia@laoe.edu).

Sincerely,

A handwritten signature in black ink, appearing to read "Debra Duado". The signature is fluid and cursive, with a horizontal line extending from the end.

Debra Duado, M.S.W., Ed.D.  
Superintendent

DD/JG:sh

March 21, 2022

Los Angeles County Department of Regional Planning  
Attn: Chair Yolanda Duarte-White, Regional Planning Commission  
320 West Temple Street  
Los Angeles, CA 90012

## LETTER OF SUPPORT FOR THE WIRELESS FACILITY ORDINANCE

Dear Chair Duarte-White and Commissioners:

LA County Library would like to express its support of the Los Angeles County Wireless Facility Ordinance to include the proposed revisions to Title 22 (Planning and Zoning) of the *Los Angeles County Code* and Design Guidelines establishing the development standards necessary to support advances in technology and the increased demand for wireless communication.

Since 1912, LA County Library has provided library services to over 3.4 million residents living in the unincorporated areas and within 49 of the 88 incorporated cities of Los Angeles County. The Library's strategic initiatives include lifelong learning, creativity, community engagement, as well as the expansion and support of the digital library. With support from the Board of Supervisors, we have established a *Laptop & Hotspot Loan* program, expanded access to Wi-Fi connectivity at several libraries, and added Wi-Fi access points to our 19 mobile service fleet vehicles.

The recent COVID-19 pandemic highlighted the County's increased need for mobile access and expanded broadband capacity for internet users working and learning from home. It also brought a clear view of the vast disparities in access to information and technology within lower-income communities and predominantly Black and Latinx populations. As a resource and community hub, LA County Library is striving to bridge the gap and empower these communities with connectivity and digital literacy. The proposed ordinance allows additional pathways and equitable access to high-speed internet, helping further bridge the current digital divide.

The digital divide is a socio-economic and equity issue for Los Angeles County, and we need to collectively find ways to make systemic changes to address the gaps. LA County Library respectfully urges you to support the Wireless Facility Ordinance as we look forward to advancing equity and providing technology resources, emboldening the communities we serve.

Very best,



Skye Patrick  
Library Director

7400 E Imperial Highway, Downey, CA 90242 | 562.940.8400 | [LACountyLibrary.org](http://LACountyLibrary.org)



### COUNTY OF LOS ANGELES SUPERVISORS

HILDA L. SOLIS  
1st District

HOLLY J. MITCHELL  
2nd District

SHEILA KUEHL  
3rd District

JANICE HAHN  
4th District

KATHRYN BARGER  
5th District

Association of Rural Town Councils  
C/O Three Points-Liebre Mtn. Town Council  
46834 266<sup>th</sup> St. West  
Lake Hughes, CA 93532  
[ourartc@gmail.com](mailto:ourartc@gmail.com)

18 March 2022

SENT VIA EMAIL

Los Angeles County Regional Planning Commission  
Los Angeles County Regional Planning Department  
320 West Temple Street  
Los Angeles, CA 90012  
[ordinance@planning.lacounty.gov](mailto:ordinance@planning.lacounty.gov)  
[comment@planning.lacounty.gov](mailto:comment@planning.lacounty.gov)

Dear Commission Chair Duarte-White, Vice Chair Hastings, and Commissioners Louie, O'Connor, and Moon,

Subject: Agenda Item # 5, Non-Applicant, Wireless Communication Facilities Ordinance,  
Project No. 2021-002931, Plan No. RPPL2021007939

The Association of Rural Town Councils (ARTC) appreciates the opportunity to address the Wireless Communications Facilities Ordinance (WCFO) set for hearing on March 23<sup>rd</sup>, 2022. Several of our rural town councils have already experienced what they consider inappropriate placement of cell phone towers in their communities. Potential for visual impacts is very concerning, and while the ARTC recognizes the ordinance addresses, to a degree, amelioration of said impacts, we assert the ordinance does not go far enough in enumerating options to mitigate visual degradation. Since federal authorities are essentially forcing us to accept placement of wireless communication facilities across our landscapes regardless of environmental and human health, fire danger, and visual effects, it is crucial that aesthetics, i.e., scenic qualities are preserved through adequate acceptable disguise that should not be limited to tree designs, faux rock outcroppings, fencing, or shed-type buildings, but those that fit surrounding environs, which are quite diverse due to a wide array of geographical conditions in the Antelope Valley (AV).

The rapid proliferation of industrial utility-scale solar and wind projects and other proposed land use changes and development in the AV alerts us to the premium we place on open space and visual aesthetics. Many of our residents purchased their properties with views and the value of those views in mind. Ongoing efforts at disguising cell towers to appear as trees and water tanks are well-founded and provide evidence that the towers are visually repugnant, even in small communities, towns, and cities; those efforts show rural, suburban, and urban residents *all* care about *their* views.

Several county planning policies that address scenic resources in the General Plan and the Antelope Valley Area Plan (AVAP) seek to preserve the rural character of communities, scenic resources, conservation lands, county wildlife sanctuaries, state parks, and forest lands, all of which are important in maintaining local economic and cultural vitality. The ARTC believes these planning policies, along with preservation of any special visual characteristics or architectural requirements outlined in our rural area community standards districts documents must be considered when planning and implementing the WCFO. In addition to placement in public rights-of-way, scenic resources valued by rural residents should not be cast aside when neighboring private property owners seek to contract with cell service companies.

As mentioned, the ARTC understands these facilities *must* be placed, but locating them within our communities *must not* violate the scenic integrity preservation promised by the county's own planning documents, and this means **there should be reasonable effort written in this ordinance to impose permitting requirements for types of disguises readily available, and currently used elsewhere to preserve scenic value**, and not limiting those to trees, rocks, and towers.

Regional Planning might reply that some of these documents have never gone so far as to codify goals and policies, but the extensive inclusion in several current documents the statements, goals, and policies for protection of scenic drives, roads, and highways, indicates to us the intention of the County and Regional Planning to preserve these resources. Historically, Los Angeles County's Regional Recreation Plan 1965 sought the establishment and recognition of recreation areas that include enjoyment of scenic resources. Hence, the document defines a scenic drive as "an extent of highway or local road which affords visual enjoyment of nature either undisturbed or enhanced by the incidental or designed efforts of man. . . [a]n inherent aspect of this particular segment of the plan, in contrast to nearly all other segments, is *the requirement for effective control of the privately owned properties adjacent to the "scenic drive"* (Recreation Plan, Scenic Drives, Page 35). Many of the "drives" identified in the Recreation Plan appear in the Scenic Highways Element (SHE) 1974, and are further seen in the AVAP of today.

With the very real possibility of increased encroachment from unsuitable and inappropriate development, including wireless communications facilities, we are concerned with maintaining our views with not only ourselves in mind, but from the standpoint of visitors, now and in the future, who will most likely seek recreation and solitude in our area due to proximity to the greater Los Angeles Area. Higher fuel costs might dictate areas of local interest will support increasing numbers of visitors seeking respite in our rural areas possessing great natural beauty, adding to the economic vitality of our region through tourism, and at the same time, preserving the natural heritage of this area of Los Angeles County. The historic planning document—Scenic Highways Element sought also to "Enhance recreational opportunities served by a system of scenic highways," and "Preservation and enhancement of aesthetic resources within scenic corridors" (page SH-10, 11). All the policies meant to support those goals of the SHE are too numerous to mention here, but those of specific application to the WCFO include:

- Protect and enhance aesthetic resources within corridors of designated scenic highways.
- Establish and maintain rural scenic highways to provide access to scenic resources and serve recreational users.
- Establish and maintain scenic highways to provide access to interesting and aesthetic man-made features, historical and cultural sites, and urban open space areas.
- Remove visual pollution from designated scenic highway corridors.
- Require development and use of aesthetic design considerations for road construction, reconstruction, or maintenance for all scenic highways.
- Improve scenic highway coordination and implementation procedures between all levels of government [we add: including rural community leaders].

Some of the goals and policies of the SHE are integrated into the AVAP 2015, which specifically addresses scenic resources in its Chapter 2-Land Use and Chapter 4-Conservation and Open Space:

#### AVAP, CHAPTER 2, LAND USE

Policy LU 2.2: Except within economic opportunity areas, limit the amount of potential development within *Scenic Resource Areas*, including water features, significant ridgelines,

and Hillside Management Areas, through appropriate land use designations, as indicated in the Land Use Policy Map (Map 2.1) of this Area Plan (LU-3).

#### Rural Preserve Areas

Rural preserve areas are areas of the unincorporated Antelope Valley outside of Rural Town Center and Town Areas, which are largely undeveloped and generally not served by existing infrastructure and public facilities. Many of these areas contain environmental resources, such as Significant Ecological Areas, **Scenic Resource Areas**, and Agricultural Resource Areas. In addition, many of these areas contain safety hazards, such as Seismic Zones, Very High Fire Hazard Severity Zones, and Flood Zones. The primary benefit of these areas is that they provide habitat for regionally significant biological species while simultaneously **providing scenic values to residents** (LU-7).

#### Special Management Areas

Special Management Areas require additional development regulations due to the presence of natural resources, **scenic resources**, or identified hazards development regulations are necessary to prevent loss of life and property, and to protect the natural environment (WCFO allows ministerial review in these areas) (LU-12).

### AVAP, CHAPTER 4, CONSERVATION AND OPEN SPACE

Vision and Strategy: “When growth occurs, this Element will direct sustainable development to suitable locations in rural town areas, and rural town center areas and economic opportunity areas, with existing and/or planned infrastructure, protecting natural areas that provide sources of material and **scenic value**, as provided in the Area Plan’s Rural Preservation Strategy” (COS 3).

#### Scenic Resource Areas:

Goal COS 5: The Antelope Valley’s scenic resources, **including scenic drives**, water features, significant ridgelines, buttes, and Hillside Management Areas, are enjoyed by future generations.

Policy COS 5.1: Identify and **protect** natural landforms and vistas with **significant visual value**, such as the California Poppy Preserve, by designating them as Scenic Resource Areas.

Policy COS 5.2: Except within economic opportunity areas, limit the amount of potential development **in Scenic Resource Areas** through appropriate land use designations with very low densities in order to minimize negative impacts from future development.

Policy COS 5.4: Require appropriate development standards in Hillside Management Areas that minimize grading and alteration of the land’s natural contours, ensure that development pads mimic natural contours, and ensure that individual structures are appropriately designed to **minimize visual impacts** (COS-5,6).

Policy COS 5.7: **Ensure that incompatible development is discouraged in designated Scenic Drives by developing and implementing development standards and guidelines for development within identified viewsheds of these routes** (Map 4.2: Antelope Valley Scenic Drives) <https://planning.lacounty.gov/tnc/documents/>.

AVAP, CHAPTER 8, PLAN IMPLEMENTATION

E. Antelope Valley Scenic Drives Program (IMP 6).

***This Area Plan has identified a number of Scenic Drives in the Antelope Valley (Map 4.2) that should be preserved to ensure that their scenic value is maintained in the years to come. Thus, it is the intent of this Area Plan to develop and implement a program for future review of proposed developments within viewsheds of these Scenic Drives,*** which may include:

- ***Required Visual Impact Assessment for proposed development within the viewsheds of identified Scenic Drives;***
- ***Required finding for discretionary entitlements*** that the proposed development is compatible with the scenic character of the route; or
- ***Applicable development standards*** for development along a Scenic Drive.

GENERAL PLAN, CHAPTER 6, LAND USE ELEMENT

Special Management Areas

Scenic Resources

The County recognizes that *scenic features* in the region, such as the coastline and mountain vistas are ***significant natural resources*** for the County. One type of scenic resource is the Hillside Management Areas (HMAs), which are mountainous or foothill terrain with a natural slope of 25 percent or greater. The purpose of the Hillside Management Ordinance in Title 22 of the County Code is to regulate development within Hillside Management Areas to 1) protect the public from natural hazards associated with steep hillsides, and 2) to ***minimize the effects of development and grading on the scenic resources***. In addition to HMAs, the ***General Plan protects ridgelines, scenic viewsheds, and areas along scenic highways. Scenic resources are described in greater detail in the Conservation and Natural Resources Element (71).***

GENERAL PLAN, CHAPTER 9, CONSERVATION AND NATURAL RESOURCES ELEMENT

VII. Scenic Resources

The County recognizes that the coastline, mountain vistas, and other scenic features of the region are a significant resource. This section of the Conservation and Natural Resources Element addresses the preservation of valuable designated scenic areas, vistas, and roadways (159).

Issues

**1. Protection of Scenic Resources**

***Southern California has lost many of its scenic resources due to a variety of human activities. In the absence of adequate land use controls, many scenic resources have been adversely affected by unsightly development and sprawl. The visual pollution associated with the proliferation of billboards, signs, utility lines, and unsightly uses detracts from and often obscures many of the County's scenic resources. . . (161).***

Policy C/NR 13.1: ***Protect scenic resources through land use regulations*** that mitigate development impacts (162).

Policy C/NR 13.3: ***Reduce light trespass, light pollution and other threats to scenic resources.*** (162)

Policy C/NR 13.4: Encourage developments to be designed to ***create a consistent visual relationship*** with the natural terrain and vegetation (162).

GENERAL PLAN, CHAPTER 13, PUBLIC SERVICES AND FACILITIES ELEMENT

Utility Infrastructure

Policy PS/F 6.3: Expand access to wireless technology networks, *while minimizing visual impacts through co-location and design* (230).

GENERAL PLAN, CHAPTER 16, IMPLEMENTATION

C/NR 6: *Scenic Resources Ordinance* (264).

- Prepare a *Scenic Resources Ordinance that creates a scenic corridor, scenic viewshed, and significant ridgeline program and/or ordinance to protect remaining scenic resources*.
- Develop countywide ridgeline protection regulations and a countywide ridgeline map.

It is not the intent of the ARTC to bore readers with so many references to county planning documents; it is the intent of the ARTC, by stressing the goals and policies of the Antelope Valley Area Plan, and the General Plan, as well as Regional Planning historic documents, to underscore goals and policies specifically addressing the importance of preserving scenic integrity. If the ordinance does not require a discretionary permit process for all wireless communications facilities, there is no opportunity for public notice or comment to recommend acceptable disguise options that reflect specific community architectural designs or reflect adequate design to blend with natural surroundings. The Antelope Valley is geographically diverse, and its natural environments span forests (pine, oak, Joshua, juniper), mountains, hills, lakes, desert buttes, grasslands, and wildflower fields. Not all areas possess trees, which are often used to disguise towers, and are not necessarily required by this ordinance unless other trees are nearby. However, there is an impressive variety of disguise options that should be on the table with regard to construction of towers and buildings meant to obscure associated equipment, whether in the road right-of-way, or private property. Disguise options should not be limited, and design should be compatible with surrounding natural areas, and residential and commercial buildings. For a look at possible design options, please see the links: <https://4peabody.com/rf-antenna-concealment-systems-portfolio/>; [https://www.valmontstructures.com/resources/photo\\_galleries#](https://www.valmontstructures.com/resources/photo_galleries#), and below, a creative solution used in Colorado.



CHAPTER 16.25 SMALL CELL WIRELESS COMMUNICATION FACILITIES

We respectfully request that any proposed facility, whether a Tower or Small Cell Wireless Communication Facility, along an identified Scenic Highway, as depicted in the AVAP Land Use Policy

Map 4.2, within a Rural Community Standards District; within an area encompassed by a Significant Ecological Area; a Special Management Area, significant ridgelines, and any other area described as a sensitive location—require review by not only Public Works and Regional Planning, but Rural Town Councils as well. This can be achieved by insertion of language, seen below, within brackets, into CHAPTER 16.25 SMALL CELL WIRELESS COMMUNICATION FACILITIES (6/13):

Regional Planning. a SCF on a new support structure to be located in a highway identified as a Scenic Highway in the County General Plan, [*or located within a scenic highway identified in The Antelope Valley Area Plan (LU Policy Map 4.2) , or located within a rural area, Community Standards District Boundary or Special Management Area, or pedestrian or equine use trail*] or within the boundaries of a Coastal Zone or Significant Ecological Area, or within 50 feet of a Significant Ridgeline, as described in Title 22 of the county code, shall obtain land use approvals from Regional Planning, [*and will select a design appropriate to the area and acceptable to residents.*]

Title 16 Highways item 2., allows the road commissioner to develop and issue design guidelines, permit conditions, and permit checklists for SCFs and EFRs for the purpose of implementing provisions of this Title 16.

#### 16.25.040 Other requirements

2. Design guidelines and permit checklist. The road commissioner may develop and issue design guidelines for SCFs, permit conditions for SCFs and EFRs, and permit checklists for SCFs and EFRs implementing the provisions of this chapter. The permit application and checklists for SCFs and EFRs shall demonstrate compliance with this chapter for the application to be deemed complete.

The ARTC asks to participate further in the development of design guidelines, for assurance that the provisions developed by the road commissioner will respect the goals and policies stipulated and described above, in the General Plan and the Antelope Valley Area Plan, and to consider those in the Scenic Highway Element. In addition, we appreciate the 16.25.050 Development Standards for SCFs, Section H. Lighting, which prohibits artificial lighting: “No SCF shall contain artificial lighting that is in addition to any existing illumination provided by the support structure, such as a streetlight luminaire, unless otherwise required by applicable county, state or federal regulations” (9/13). The Association supports design guidelines instructed to comply with the Rural Outdoor Lighting Ordinance in order to preserve, to the greatest extent possible, the dark night skies of the Antelope Valley.

#### TITLE 22, SECTION 13., 22.140.650 WIRELESS FACILITIES

##### D. Application Requirements.

Ministerial Site Plan Review. [SPR]

A Ministerial Site Plan Review (Chapter 22.186) application is required to authorize the following:

- a. Installation and operation of a small cell facility located on private property and public property that is not a public right of way.

The ARTC has concern that a Ministerial SPR for installation of a small cell facility on private, or even public property, without consultation with affected landowners, homeowners, or neighboring property owners without consideration of views, structure, color choice, or residential proximity to equipment could equate to loss of viewshed for individual homeowners or communities, and loss of property value due to destruction of viewshed, or even fire risk. Please review this article from Harrisburg, Pennsylvania ([new-5g-poles-cause-resident-uproar-in-harrisburg-pa](#))—as it outlines several issues that will occur as 5G networks are installed across the county, and will especially affect our rural communities and special

management areas. The main takeaways in the article are “communication” with residents, “common sense location” and “suitable aesthetic design options” for those affected. This must be required through the permitting process, and is not currently required by a Ministerial Site Plan Review (SPR). As part of a checklist or pre-application for small cell facility applications and SPR—an aesthetic evaluation/design review; a representative visual simulation; acoustical evaluation for installed fans or cooling equipment; undergrounding of equipment (including macro towers); maintenance and decommissioning requirements for repair or removal of defunct facilities; and consultation with county; community leaders, including rural town councils; and publicly noticed affected residents for projects—should be inserted into Titles 16 and 22. Furthermore, SCFs on private structures should be reviewed by county for compliance with scenic objectives in GP and AVAP, so as to not significantly create a new obstruction to primary and inherently valuable sightline(s) of an adjacent property, (for example, if proposed equipment is located between the front living room windows of a residence and a mountain view plane, or directly between an outdoor restaurant dining area and adjacent parkland).



Unsightly Small Cell Facility, <https://www.communityvoiceks.com>



Harrisburg, PA, Small Cell Facility, May 21, 2021. Photo: Dan Gleiter/PennLive Harrisburg 5G Poles

There is precedent for our requests found in numerous city and county codes discovered in searches related to small cell facilities. For example, the City of Hayward, California has a “Department of Public Works Small Cell Design Guidelines and Permit Process—Wood Utility Pole” document describing design and application requirements that include those we detailed above, and some that should be additionally considered, below, and one of deep importance to rural residents—public notice requirements.

Please note, public notice is required **prior** to permit application, and conducted by the applicant:

**Public Notification**

19. Public notices must conform to the template provided by the City:
  - a. Notices to include clear description of the scope of work, site photos, map of the general area with the site identified, rendering of proposed equipment in a photograph of the pole and area within 50 feet, property map, and applicant contact info. Rendering must illustrate the size of the Facility proportional to its surroundings.
  - b. Notices to be on the applicant's letterhead and must use a format provided by the City.
  - c. Site photos to be from three different locations with line sight to the Facility and on nearby public streets or other adjacent viewpoints.
  - d. Notices to include a statement indicating that the planned small cell installation has been coordinated with the City of Hayward.
  - e. Notices to include the duration of construction.
20. Upon approval of site reservation and prior to permit submittal, applicant must mail informational notices to tenants, businesses, and property owners within 300 feet.
21. Notified recipients must be given 20 calendar days to contact the applicant with their concerns and questions.
22. Applicant must respond to concerns and questions to address and resolve any issues prior to permit application submittal.
23. Notices are logged by location with information on comments, responses, and delivery including person, date, and method of delivery.
24. Public notification documentation including, notice, concerns and questions, responses, log, proof of notification, and list of recipients, must be submitted with permit application.
26. Public notice must have been delivered at most 60 days before permit submittal. Additional Public notice may be necessary if the application is delayed.

Most rural areas of unincorporated Los Angeles County do not have streetlights, which are prominently identified as locations for positioning small cell facilities. This causes the ARTC further concern, should 5G networks extend to our communities. However, electrical utility poles within the road right of way (ROW) will be targeted. We must assume utility poles are placed in ROWs with the express consent of Public Works. Can we also assume Public Works will impose disguising requirements should Southern California Edison and Los Angeles Department of Water and Power undertake leasing utility pole space along scenic roads and highways for cell facilities? It would be an abomination if our recommendations against unsightly small cell facilities (such as the type depicted above) and macro towers with appurtenant buildings and fencing were ignored along our scenic area roadways and picturesque rural communities with regard to existing utility poles.

TITLE 22.140.650, SECTION 13., WIRELESS FACILITIES

- D. Application Requirements,
- E. Development Standards,
  - d. Height

- i. In Industrial, Rural, Agricultural, Open Space, Resort-Recreation and Watershed Zones, the maximum height of a non-building-mounted wireless facility shall be 75 feet.
    - iii. In Zones R-1, R-2, and R-3, the maximum height of a wireless facility shall be 35 feet, and for a small cell facility not in the public right of way, the maximum height shall be 50 feet.
  - e. Design standards,
    - ii. Color. All pole-mounted equipment not concealed shall be treated with exterior coatings of a color and texture to match the predominant visual background or existing architectural elements to visually blend in with the surrounding development.
3. Additional standards for monopoles.
- d. Architectural Towers. Architectural towers shall:
    - i. Completely conceal equipment, including antennas; and
    - ii. Blend in with the architecture of buildings located near the tower location.

The ARTC requests that maximum height associated with a wireless facility be considered within the maximum height requirements set forth in individual community standards district's building height allowances along with setbacks, and as mentioned many times, preservation of scenic integrity. This should also be considered when reviewing for Small Cell Facilities in residential areas zoned for agriculture, A-1 and A-2. Why are R-1, R-2, and R-3 zones allowed a 35 foot height maximum? If a tree disguise is chosen, evaluating height with surrounding trees or vegetation for least intrusive impacts and more favorable visual aspects should be implemented. In addition, pole-mounted equipment must be concealed *and* painted, or the visual impacts depicted on page 7 of this letter will be the result. Similarly, architectural design considerations that are to "blend in with the architecture of buildings located near the tower location" ignores those rural community standards districts that have specific requirements for building design that will not coincide with item 3.d.ii. Please insert language that tower designs will respect CSD specific architectural requirements. Anything less will be an assault on our CSDs and scenic preservation professed in the General Plan and the AVAP cited previously.

Finally, the ARTC posits California Supreme Court ruling in the case of T-Mobile West LLC v. City and County of San Francisco has made it clear that aesthetic design standards requirements can be imposed upon wireless facilities by planning departments in cities and counties across California, as reported by JD SUPRA:

"Local governments may require a permit conditioned on compatibility with aesthetic standards to install and maintain wireless communications infrastructure in the public right-of-way, the California Supreme Court held in *T-Mobile West LLC v. City and County of San Francisco*, No. S238001 (April 4, 2019). The court rejected a facial challenge brought by telecommunications companies to a San Francisco ordinance that requires a permit to install and operate wireless service facilities in the public right-of-way and establishes standards for aesthetic compatibility in historic districts and other areas." (<https://www.jdsupra.com/legalnews/california-supreme-court-upholds-24196/>).

The ARTC asserts that the WCFO should include statements that it enforces the goals, policies, and development standards from the General Plan and the Antelope Valley Area Plan documents, Rural Community Standards Districts documents, and the guidance they provide for orderly and considerate development consistent with special management areas, and scenic qualities that residents and visitors to the AV enjoy. However, the ARTC has, as its utmost responsibility, to protect and preserve our rural way

of life, our health and well being, and our natural surroundings. That includes our small towns and communities, local agriculture and raising livestock, desert landscapes and other scenic resources, conservation lands, wildlife sanctuaries, state parks, and forest lands, all of which contribute to rural community character, contribute to local economies, and maintain our cultural vitality.

Finally, in connection to the ARTC's effort to protect and preserve, our attention turns to small cell facilities, macro towers, and fire safety. Frequent windy and dry conditions in the Antelope Valley increase the possibility of catastrophic fire in our communities. A proliferation of cell facilities increases that risk. Residents are also left without the ability to control density of projects, not only in Very High Fire Hazard Severity Zones, but populated areas as well. See: [Cell Tower Fire, Lapeer, MI](#); [Cell tower fire & collapse Otay, CA](#); [Welders cause cell tower fire](#); and [Is 5G a potential fire hazard?](#) **"Three fires in California have been started either in part or in whole by telecommunications equipment failures: Silverado, Woolsey and Malibu Canyon"** (The Aspen Times, June 12, 2021). Firefighters cannot approach and electrical fire until power is disconnected, which can take hours. In a high wind event that will be absolutely catastrophic. Fires can also be caused by maintenance welding. Utility workers have parked vehicles over tall grass and brush, causing fire. Are Los Angeles County residents supposed to absorb the cost of risk in order for telecommunications corporations to reap a profit? It is almost impossible to acquire reasonably priced fire insurance now, and many residents face exorbitantly high premiums they cannot afford, or cancellation. Will individuals be liable to their neighbors if they allow a cell facility placed on their property or structure, that later causes a fire? Will the County be liable for fires caused by cell facilities that it permits with a ministerial site plan review against objections by residents? Is it wise to have cell towers and small cell facilities so close to our homes, schools, businesses, and special management areas?

Rural residents rely upon the intent and promise of the County of Los Angeles, and both Regional Planning and Public Works Department, to uphold and enforce not only community standards and planning documents that seek to preserve the visual and environmental integrity of our Antelope Valley, but also protect us from fire through adequate measures described in their goals, policies, and ordinances. Residents *must* have rights to public notice and hearings on the location of small cell facilities and macro towers on not only public lands, ROWs, but private property as well. As the WCFO and Design Guidelines are written now, the ARTC cannot support their approval, and instead, requests a postponement to ensure public concerns are met and amendments made before these documents move forward in the process.

Yours Truly,



Susan Zahnter  
Director

Copy to: Supervisor Kathryn Barger, Planning Deputy Anish Saraiya, Senior Field Deputy Donna Termeer, Assistant Field Deputy Charles Bostwick, Supervising Regional Planner Mark Herwick

**MACKENZIE & ALBRITTON LLP**

155 SANSOME STREET, SUITE 800  
SAN FRANCISCO, CALIFORNIA 94104

---

TELEPHONE 415 / 288-4000  
FACSIMILE 415 / 288-4010

March 21, 2022

**VIA EMAIL**

Regional Planning Commission  
Los Angeles County  
320 West Temple Street  
Los Angeles, California 90012

Re: Draft Wireless Facility Ordinance  
Commission Agenda Item 5, March 23, 2022

Dear Commissioners:

We write on behalf of Verizon Wireless to provide comment on the draft wireless facilities ordinance (the “Draft Ordinance”). Verizon Wireless supports adoption of the proposed resolution recommending approval of the Draft Ordinance to the County Board of Supervisors (Plan No. RPPL2021007939) with the revisions recommended by staff and with further revisions that Verizon Wireless recommends in this letter. The Draft Ordinance will advance the Board’s October 2020 motion “Establishing Pathways to Equitable Access to High Speed Internet and Bridging the Digital Divide” by updating the zoning code to streamline the permitting of broadband infrastructure and by ensuring that County permit procedures follow best practices. The Draft Ordinance will help facilitate the deployment of advanced telecommunications networks in the communities it serves. Verizon Wireless is continuously working to build its wireless broadband networks to meet the growing demand resulting from rapidly-increasing use of mobile devices (smartphones, tablets, wearables, hotspots) and exponential use of data that powers video conferencing, telemedicine, remote learning, and hybrid work, all of which support our economic recovery. With its robust network, Verizon Wireless now provides a fast and reliable broadband option for the home and small businesses.

Verizon Wireless appreciates the positive revisions made by staff in response to our earlier comments. There remain a few issues to be addressed to ensure that the Draft Ordinance is consistent with federal law and that standards are feasible. For example, Verizon Wireless recommends that the process to approve “eligible facilities requests” to modify existing facilities be revised to comply with Federal Communications Commission (“FCC”) regulations, and that the height limit in residential zones be modestly increased for architecturally-integrated facilities on parcels with a non-residential use.

We urge the Commission to direct staff to make the revisions suggested in this letter prior to recommending the Draft Ordinance to the Board of Supervisors. Our comments to the Draft Ordinance are as follows.

### **22.140.700 – Wireless Facilities**

**(D)(1)(b), (D)(3), G(3). Eligible facilities requests.** For eligible facilities requests to modify existing facilities, these provisions require either ministerial site plan review or a Revised Exhibit “A,” depending on the type of approval previously issued. However, a Revised Exhibit “A” is inappropriate because it requires findings that are preempted by FCC rules, such as consistency with the original discretionary approval and compliance with various zone standards. Code § 22.184.030(A). In contrast, the FCC’s rules for eligible facilities requests specify six objective “substantial change” thresholds that are the only approval criteria the County can consider because they preempt the local zoning code. 47 C.F.R. § 1.6100(b)(7). While staff revised this section to acknowledge that some prior conditions of approval may be preempted by an eligible facilities request, the findings for a Revised Exhibit “A” remain a problem. The need for a waiver cannot be a factor because any local standards to be waived are preempted as well.

The FCC’s rules apply to all legally existing wireless facilities, regardless of the type of permit originally issued, so all eligible facilities requests should be approved under a uniform process. A ministerial site plan review is appropriate as it does not require any preempted or discretionary findings. *To ensure that all eligible facilities requests are approved via ministerial site plan review, Verizon Wireless recommends that Section (D)(1)(b) be revised to delete the phrase, “that was previously approved with a Ministerial Site Plan Review (Chapter 22.186),” and that Sections (D)(3) and G(3) be deleted.*

**(E)(1)(b)(iv). Ban on historic buildings and structures.** In some cases, new wireless facilities may pose little impact on historic buildings. In fact, the FCC reached an agreement with state historic preservation officers to allow siting of “small or minimally visible wireless antennas” on certain historic buildings without review under Section 106 of the National Historic Preservation Act, including buildings on the National Register of Historic Places (except national landmarks). *See Second Amendment to Nationwide Programmatic Agreement for the Collocation of Wireless Antennas, 47 CFR Part 1, Appx. B, § VII.* A small cell antenna can be integrated into a historic building with no noticeable change, for example, concealed in a faux vent pipe on the roof. *Verizon Wireless requests that the County consider allowing small wireless facilities on historic buildings if architecturally integrated. Verizon Wireless also suggests allowing new support structures on the grounds of properties listed or eligible for listing on the National, California, or County historic registers after a historical assessment.*

**(E)(1)(d)(ii). Height limit in R-1, R-2, R-3 zones.** This provision would limit the height of macro facilities in these zones to only 35 feet, while allowing small cells up to 50 feet. However, macro facilities may be needed to provide broad coverage where surrounding zones are predominantly residential. There are non-residential uses such as religious facilities throughout these County residential zones, and they provide an opportunity to site macro facilities in architecturally-compatible features such as steeples or bell towers. *Verizon Wireless*

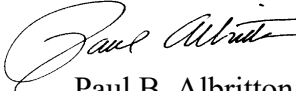
*suggests allowing a height up to 50 feet for non-small cell facilities disguised as “architectural towers” on residentially-zoned parcels with a non-residential use.*

**(E)(2)(a). Monopole extensions limited to two feet.** There is no feasibility exception for this absolute two-foot limit on monopole extensions, and it directly contradicts Section H(2)(a)(ii) which allows mounting equipment up to eight feet long. To serve its sizable customer base, Verizon Wireless typically installs 9 to 12 panel antennas on its monopoles, in groups of three or four antennas mounted on horizontal arms that must generally extend over two feet, but no more than eight feet. *To avoid contradiction, Verizon Wireless recommends that Section (E)(2)(a) be deleted.*

**(K). Permit duration.** This allows a 15-year permit term, but addresses only conditional use permits. Per Section (D)(1), some wireless facilities would be approved with ministerial site plan review, and the County should allow a 15-year permit term for those as well. *Verizon Wireless recommends that the words “conditional use” be deleted. Verizon Wireless also recommends that the County consider allowing a permit to be renewed administratively if a facility has operated in compliance with original conditions and with no violations.*

Verizon Wireless greatly appreciates the County’s collaborative approach to developing a new wireless ordinance. The County’s collaborative approach is consistent with the Board’s October 2020 motion indicating the County’s “need to focus on major, regional, telecommunications infrastructure,” including collaborating with the telecommunications industry to support development of “best in class” infrastructure to provide connectivity and services, particularly in underserved rural communities. As mentioned earlier, Verizon Wireless supports adoption of the proposed resolution recommending approval of the Draft Ordinance to the Board of Supervisors with the revisions recommended by staff and the revisions recommended by Verizon Wireless in this letter. We urge the Commission to direct staff to make the changes suggested in this letter prior to recommending the Draft Ordinance to the Board of Supervisors.

Very truly yours,



Paul B. Albritton

cc: Rodrigo A. Castro-Silva, Esq.  
Bruce Durbin  
Alyson Stewart  
Daisy M. Uy Kimpang  
Randal Hernandez  
Ethan Rogers

## Alyson Stewart

---

**From:** Tiffany Hedgpeth <thedgpeth@edgcomb-law.com>  
**Sent:** Monday, March 21, 2022 9:26 PM  
**To:** DRP Ordinance Studies  
**Cc:** amgpeter@yaho.com  
**Subject:** Comments Re: Advance Planning Case No. RPPL2021007939

**CAUTION:** External Email. Proceed Responsibly.

**COMMENTS REGARDING  
WIRELESS FACILITY ORDINANCE FOR TITLE 22 (PLANNING AND ZONING CODE) AT REGIONAL PLANNING  
COMMISSION  
Advance Planning Case No. RPPL2021007939**

We are two of over 400 residents in the Stevenson Ranch community who are opposed to a proposed 75-foot Macro Site cell tower in the middle of our R-1 zoned residential community. Proceedings currently are pending before the hearing officer. Based on our experience with the proposed project, the following modifications to the draft ordinance should be made.

1. The Current Policy Requirement That The Proposed Tower Is Necessary To Address A Significant Gap Should Be Maintained

The Subdivision and Zoning Ordinance Policy No. 01-2010 Wireless Telecommunications Facilities ("Policy") requires the applicant to provide "a written explanation, and documentation . . . That the proposed wireless facility is necessary to close a significant gap in coverage in the applicant's service."

The draft ordinance does not appear to require any showing of the need for a cellular facility at a particular location or the need for a cellular facility to be designed in a particular manner, including its height. In our situation, an AT&T representative dumbfounded the community at a Homeowner's Association meeting when he stated that the "only" place in Stevenson Ranch that received cellular service is the Walmart parking lot. As the majority of the community has no issue with cellular service (there is one significant "dead" area, which would not be impacted by the proposed Macro Site), including those community members with AT&T as their service provider, this premise was shocking. While the hearing officer is currently evaluating AT&T's justification for the purported "need," what became clear is that AT&T does not understand the scope of cellular service in our community. As a result, it has not and cannot perform an adequate alternatives analysis and simply wants to move forward with a 75-foot tower to see who, if anyone, it might help. Fortunately, the current policy requires AT&T to establish a significant coverage gap and the need for the proposed facility. However, under the draft ordinance, it appears AT&T or any other project proponent could move forward without adequate justification for doing so.

Installation of a cellular facility is controversial. People are concerned with aesthetics, potential impacts to health, and other hazards. They generally do not want cellular facilities near their homes or schools, and they certainly do not want a Macro Site that is more than twice the height of what is permitted by zoning in their neighborhoods. Because of this, project proponents should continue to have to justify the need for their projects and why a cellular facility must be sited in a particular location and of a certain height. Otherwise, we can expect cellular providers to install cellular facilities in a manner and location that simply is most cost effective for them without regard to the impact a project has on the community (e.g., one giant tower may be cheaper than identifying specific gaps and installing multiple smaller facilities that are targeted at addressing those gaps). Therefore, to protect the residents of the community, the County should continue to require cellular facility project proponents to establish (1) that a significant gap in coverage exists, and (2) that the cellular facility is necessary to address that significant gap.

2. The Current Policy Requirement That The Proposed Site Is The Least Intrusive Site That Is Available In The Coverage Area That Is Capable Of Closing the Significant Coverage Gap In Terms Of Visual And Aesthetic Impacts Should Be Maintained

The Policy requires the applicant to provide “a written explanation, and documentation . . . That the proposed site is the least intrusive site that is available in the coverage area that is capable of closing the significant coverage gap in terms of visual and aesthetic impacts.” The draft ordinance does not appear to require an alternatives analysis that includes an evaluation of other locations. As noted above, cellular providers will seek to site cellular facilities where it is most cost effective for them, without regard to community impacts. In order to protect the community and minimize visual and aesthetic impacts, the County must continue to require project proponents of cellular facilities to justify their proposed locations.

Thank you for considering the above comments.

Tiffany Hedgpeth  
25900 Twain Place  
Stevenson Ranch, CA 91381  
[tiffhedgpeth@gmail.com](mailto:tiffhedgpeth@gmail.com)  
818-400-6871

Annette Peterson  
25916 Twain Place  
Stevenson Ranch, CA 91381  
[amgpetereson@yahoo.com](mailto:amgpetereson@yahoo.com)  
661-305-0343

## Alyson Stewart

---

**From:** S. Kennedy <smk3449@hotmail.com>  
**Sent:** Monday, March 21, 2022 3:16 PM  
**To:** DRP Ordinance Studies  
**Subject:** PLEASE PAUSE

CAUTION: External Email. Proceed Responsibly.

To whom it may concern,

I am told that there was a meeting today to discuss two new ordinances establishing permission to put up 5G towers on private property and highways. I have great concerns about the safety of these towers and great distress that the general public has no say in this matter.

As our health is potentially at risk, shouldn't we have a right to know about what is happening and having the opportunity to ask questions?

I am scared by what is happening in the world today, and this is another example of a government that does not include the people's will in their actions.

I urge you to pause. And to include public opinion in your plans and actions.

Are we not a democracy?

Sincerely  
Shelayna Kennedy

Sent from my iPhone

## Alyson Stewart

---

**From:** Nicole Pajer <ncpajer@gmail.com>  
**Sent:** Monday, March 21, 2022 9:14 PM  
**To:** DRP Ordinance Studies  
**Subject:** Please keep 5G out of LA neighborhoods!

**CAUTION:** External Email. Proceed Responsibly.

I am writing as a concerned citizen asking you to please refrain from placing small cell 5G towers in and near neighborhoods.

5G is 10x more radiating than 4G and is especially harmful to kids. As a mother to be, this GREATLY concerns me and I do not want any sort of 5G broadcasting tower or small cell ANYWHERE near my home. It is incomprehensible to me that our elected officials would vote to install these small cell towers so close to our homes and have them go within 6 feet of our children's bedrooms. This is new technology with many known side effects and doctors around the world are urging legislators to SLOW DOWN before hastily putting our health and the health of our children at risk by bringing this technology into our neighborhoods where we would have exposure on a 24/hour basis. As a taxpayer, a constituent and a resident of SoCal, I should be able to trust that my legislators have my best interests at heart and care about the health of our community.

I understand that this technology must move forward but please keep it out of our neighborhoods. We should be able to sleep and let our bodies heal and regenerate at night in the safety of our own homes and not have cell phone towers outside of our bedroom windows and in the neighborhood streets where our children play. Please do your research and make the right decision!

--

Nicole Pajer  
818.398.1594

## Alyson Stewart

---

**From:** Nichole McGinley <nichole.mcginley@gmail.com>  
**Sent:** Monday, March 21, 2022 10:33 AM  
**To:** Elida Luna; DRP Ordinance Studies; DRP Info; firstdistrict@bos.lacounty.gov; HollyJMitchell@bos.lacounty.gov; Sheila; FourthDistrict@bos.lacounty.gov; Barger, Kathryn; henry.stern@sen.ca.gov  
**Subject:** Item 5: Project No. 2021-002931-(1-5) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance

**CAUTION:** External Email. Proceed Responsibly.

**To: Los Angeles the County Department of Regional Planning & Los Angeles County Board of Supervisors**

**Item 5:** [Project No. 2021-002931-\(1-5\) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance](#)

Dear Los Angeles County Department of Regional Planning & Los Angeles County Board of Supervisors:

In Malibu, a city that has burned twice in the last 15 years because of telecommunications structural and/or electrical engineering failures, we brought in a team of an attorney, an electrical engineer, and a fire safety consultant. Together they discovered something you need to know about for the fire protection of Los Angeles County, of which Malibu and the surrounding cities are a part. The telecommunications industry is exempt from multiple electric and fire safety codes at the federal, state and Los Angeles County level. Therefore, Malibu accepted the responsibility for requiring electrical and structural engineering rigor at the front end (the application stage) for all cell towers, macro and small cells. We are asking our counterparts in LA County to do the same.

With the help of our expert team we came up with what is known as the Electric Fire Safety Protocol and we urge you to utilize the same language that was created for Malibu. That protocol is included in an alternate ordinance that is being offered to Los Angeles County by attorney Julian Gresser. We further urge you to include this protocol along with the following:

- Notice and hearing required for all but eligible facilities and backup generators for towers · Need better and fuller application content requirements, even if wrongly treat as ministerial
- Must ensure all safety precautions have been made, including fire and electrical hazards, before permit is granted.
- Ensure all required environmental reviews have been conducted and any necessary other permits have been obtained before land use authorization is considered or at least granted
- Ensure all required historical reviews have been conducted and any necessary other permits have been obtained before land use authorization is considered or at least granted · Need at least 1500-foot setback from all residential areas and schools; allow your residents and schoolchildren time to escape should a cell tower catch fire, requiring the power to be cut before it can be fought
- Ensure proper fall zones (at least 1.20 times the height of any tower)

Most cities do not realize that telecom is policing itself when it comes to fire safety. Also, most people don't realize that cell towers can catch fire and when they do, because they are electrical devices, they cannot be fought through conventional means. The power has to be cut and that takes between 10 and 60 minutes. During that time, imagine if there is a Santa Ana wind. People need time to escape and that is why we are attempting to further protect our residential areas in Malibu. We urge the Los Angeles County Planning commission and Board of Supervisors to do the same.

NEC, the National Electric Code, is the basis for other electric codes in the state of California. Every County and City is quick to say that they adhere to all applicable electric and fire safety codes. And this is certainly a noble goal. The problem is when there is an exemption within those codes that most often the cities and counties don't know about. For all intents and purposes telecom is policing telecom and there is no state in this country where fire is a bigger risk and a bigger threat than in California. So please Institute of electrical and structural safety through the Electric Fire Safety protocol so that we can make Los Angeles County a less destructive place to call home.

The argument is being made that the small cell buildout is needed so everyone can call 911. The CPUC's redundancy program requires mandatory backup for macro towers. That means when the power is cut the macro towers will still operate. Many of the small cells will get waivers because it is extremely difficult and dangerous to put backup generators with fuel in the public right-of-way. Small cells are not a means to secure communication. The CPUC has already taken care of that with the macro towers.

Here's to a safer Los Angeles County!

## **B. Deference to Local Government**

**The Commission acknowledges that local citizens and local governments are often in a better position than the Commission to measure local impact** and to identify alternative sites. Accordingly, the Commission will generally **defer to local governments** to regulate the **location** and design of cell sites and MTSOs including (a) the issuance of **land use** approvals; (b) Acting as lead Agency for purposes of satisfying the **CEQA** and (c) the satisfaction of **noticing** procedures for both land use approvals and CEQA procedures.

## **§ 80-3. Scope**

Latest version.

· The provisions of this Code shall apply to the construction, alteration, moving, repair and use of any electrical wiring on any premises within the unincorporated area of the County of Los Angeles and to such work or use by the County of Los Angeles within any incorporated city not exercising jurisdiction over such work or use.

The provisions of this Code shall not apply to public utilities; or to electrical wiring for street lighting or traffic signals located primarily in a public way; or to mechanical equipment not specifically regulated in this Code.

Where, in any specific case, different sections of this Code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Except as hereinafter changed or modified, the building standards contained in the National Electrical Code of the National Fire Protection Association, Inc., which are published in the California Building Standards Code, are applicable to all occupancy groups and uses throughout the County of Los

Angeles. Amendments to the building standards contained in the National Electrical Code, by state agencies, are applicable only to those occupancies or uses which the state agency making the amendment is authorized to regulate.

(Ord. 2002-0077 § 3, 2002.)

## **LA county electrical code**

**Therefore we urge Los Angeles County to adopt what the city of Malibu has already adopted and that is our electric fire safety protocol which applies the same degree of engineering rigor as for an illuminated sign on the corner convenience store.**

## **Malibu requires**

(v) **Electrical and Structural Safety Information.** The following engineering documents prepared under the responsible charge of and sealed by a California licensed professional engineer must be included in the application:

(A) A short circuit and coordination study (“SCCS”) calculated pursuant to the IEEE 551-2006: Recommended Practice for Calculating AC

Short-Circuit Currents in Industrial and Commercial Power Systems or the latest version of that standard. The study must demonstrate the protection devices will ensure the equipment enclosure will not be breached. The SCCS must include analysis of Voltage Transient Surges due to contact of conductors of different voltages;

REASON FOR REQUIRING THIS DOCUMENT: This study is required to demonstrate the installation complies with NEC Articles 110.9, 110.10, 110.16 and 240.

WHY THIS STUDY IS IMPORTANT: All electrical equipment will fail. This study ensures that electrical equipment will not catastrophically fail. As an example, electrical conductors may rub together and damage the insulation, allowing excessive current to flow. This study ensures that the fuse or circuit breaker de-energizes the circuit fast enough to prevent arcing or fire. This study could have identified beforehand that meters would catastrophically fail in Stockton in 2015. This study can ensure that a WCF mounted on poles with transmission and distribution circuits, does not fail like 5000 electric meters did in Stockton in 2015.

(B) A one-line diagram of the electrical system;

REASON FOR REQUIRING THIS DOCUMENT: This diagram provides a map of the electrical installation and serves as the primary reference for all the other documents.

WHY THIS DIAGRAM IS IMPORTANT: This document allows less experienced electrical workers to quickly trouble shoot electrical malfunctions and failures and to identify a de-energization point.

(C) Voltage Drop & Load Flow Study;

REASON FOR REQUIRING THIS DOCUMENT: This Study proves the electrical conductors are large enough to ensure that equipment supplied by the electricity flowing through conductors operate within the design range for that item of equipment.

WHY THIS STUDY IS IMPORTANT: If the voltage is too low or too high, electrical equipment may not operate correctly or be damaged.

(D) Load Calculation;

REASON FOR REQUIRING THIS DOCUMENT: The load calculation ensures each item of equipment is sized to safely carry the design load.

WHY THIS DOCUMENT IS IMPORTANT: This document lists all load connected to the electrical system.

(E) Panel Directories;

REASON FOR REQUIRING THIS DOCUMENT: Panel Directories are provided to show workers which switch or breaker de-energizes a specific circuit or piece of equipment.

WHY THIS DOCUMENT IS IMPORTANT: The panel directory is required by Electric Codes so that electrical workers or less experienced individuals can quickly de-energize a circuit in an emergency without a “trial and error” approach.

(F) A plot plan showing the location of the mounting structure including address, or structure designation, or GPS location;

REASON FOR REQUIRING THIS DOCUMENT: This document is necessary to quickly identify the location for prompt emergency and non-emergency response.

WHY THIS DOCUMENT IS IMPORTANT: This document shows the exact location of the WCF and the access route. Power poles are commonly assigned addresses that may be located several hundred feet from the actual location.

(G) A plot plan showing the location of the service disconnecting means;

REASON FOR REQUIRING THIS DOCUMENT: This document is necessary to demonstrate the location of the switch or circuit breaker that separates the customer electrical system from the utility electrical system. This is commonly called the “main switch” or the “main circuit breaker”.

WHY THIS DOCUMENT IS IMPORTANT: A WCF has been proposed on a streetlight pole on Cross Creek Road. The WCF is powered from one electric service. The streetlight is powered from a separate electric service. In order to suppress a fire, the power to the streetlight and the power to the WCF must both be de-energized. This plan shows both de-energization points. Service disconnects for streetlights may be several hundred feet away on a different street.

(H) An elevation drawing of the equipment and the service disconnecting means;

REASON FOR REQUIRING THIS DOCUMENT: This drawing shows how the equipment will look once installed. It is critical to ensure the workspace has adequate room to operate safely.

WHY THIS DOCUMENT IS IMPORTANT: Performing work on electrical equipment is hazardous. Workers are entitled to sufficient room to safely work and to escape if an arc develops.

(I) A demonstration there will be signage as required by the California Electric Code or the Los Angeles County Fire Department Chief or his or her designee;

REASON FOR REQUIRING THIS DOCUMENT: The CEC requires that electric equipment be labeled.

WHY THIS DOCUMENT IS IMPORTANT: This is necessary to ensure that first responders or electrical workers safely de energize the correct equipment.

(J) A demonstration the service disconnecting means shall be mounted at an elevation determined by the Los Angeles County Fire Chief or his or her designee in conjunction with the electric utility;

REASON FOR REQUIRING THIS DOCUMENT: The CEC specifies that the service disconnecting means be readily accessible, which generally means operable without a ladder. To prevent vandalism of communication systems in public right of ways, the service disconnecting means may be mounted out of reach from the ground.

WHY THIS DOCUMENT IS IMPORTANT: To prevent casual vandalism, the service disconnect may be mounted at a height not reachable from ground level.

(K) A demonstration there will be instructions for deenergizing the equipment by First Responders.

REASON FOR REQUIRING THIS DOCUMENT: Certain electric equipment must be de-energized in a specific sequence to ensure safety.

WHY THIS DOCUMENT IS IMPORTANT: Certain electrical equipment can create an additional hazard if de-energized in the incorrect sequences.

(L) A list of toxic substances that may develop during arcing or fire that may impede fire suppression efforts;

REASON FOR REQUIRING THIS DOCUMENT: The intense heat of an electrical arc may turn non-hazardous substances into hazardous substances. Special protective equipment may be required.

WHY THIS DOCUMENT IS IMPORTANT: Electric arcs instantly reach temperatures of thousands of degrees. Normally non-hazardous material may become hazards. Metals may vaporize and damage lungs.

(M) A list of hazards that may develop during arcing or fire that may impede fire suppression efforts;

REASON FOR REQUIRING THIS DOCUMENT: Arcing or fire may create a pressure wave that can imperil life, health and property.

WHY THIS DOCUMENT IS IMPORTANT: Electric arcing can vaporize copper or aluminum. Copper expands 67,000 times when converted from solid to vapor, which can cause an air blast that throws an individual several feet with fatal force.

(N) Structural Safety Information. The structural/civil engineering documents as recommended by a California licensed professional civil or structural engineer. The standard recommended by APCO/ANSI Public Safety Grade Site Hardening Requirements – APCO ANS 2. 106. 1-2019 It is required by federal law and the County of Los Angeles.

**Thank you very much for protecting our county,**

**Nichole McGinley  
310 874-9642  
Malibu, CA Resident**

## Alyson Stewart

---

**From:** Nancy Lucas <nancy@creativehomehealing.com>  
**Sent:** Monday, March 21, 2022 11:03 AM  
**To:** DRP Ordinance Studies  
**Subject:** 5 G ROLL OUT

**CAUTION:** External Email. Proceed Responsibly.

I am completely against the 5G rollout in Los Angeles. There is enough evidence to show the hazards and negative risks to our health. As a citizen of LA County I vote against this.

Nancy A Lucas

**CREATIVE HOME HEALING**

W: [www.creativehomehealing.com](http://www.creativehomehealing.com)

IG: [Creativehomehealing](#)

PH: 310-702-0199

## Alyson Stewart

---

**From:** MALIBU MEDITATION <meditationmalibu@gmail.com>  
**Sent:** Monday, March 21, 2022 12:58 PM  
**To:** DRP Ordinance Studies  
**Subject:** Wireless Facility Major Concern for Malibu

**CAUTION:** External Email. Proceed Responsibly.

To Whom It May Concern,

We are extremely concerned regarding the proposal of 5G implementation in Malibu. Since the tower testing began in Malibu we have tested levels way above that which is deemed safe.

There is minimal testing on the safety of 5G yet what is available shows the dire effects of RF and EMF waves on human health and wellbeing.

On the days when we personally recorded levels at astronomical levels neighbors also complained of a painful burning sensation on top of their heads. EMF is linked to serious cell damage, insomnia, nausea, and illnesses including cancer or leukemia in children. This is unacceptable and we do not accept this type of unsafe environment in our community.

It is entirely reckless to even consider this when there have been clear links to fatal illnesses caused by this invisible threat of 5g.

We ask that you keep in place and further heighten the safety regulations regarding this matter.

Sincerely,  
Jadee Rhodes  
Gracie & Roo

## Alyson Stewart

---

**From:** Lesley Weinstock <lesleyweinstock@yahoo.com>  
**Sent:** Monday, March 21, 2022 10:59 PM  
**To:** DRP Ordinance Studies  
**Subject:** Lesley Weinstock, Comments for Mar. 23, 2022, LA County Planning Board Proposed Changes to County Code Title 22  
**Attachments:** Lesley Weinstock\_Comments\_ Mar. 23-2022\_ LA County Planning Board Proposed Changes to County Code Title 22.docx

**CAUTION:** External Email. Proceed Responsibly.

### LA COUNTY WIRELESS ORDINANCE HEARING MARCH 23, 2022, 9:00 AM:

#### **Lesley Weinstock, Comments for March 23 Wireless Hearing: Re: March 23 Los Angeles County Planning Board Proposed Changes to County Code Title 22:**

To whom it may concern:

I do not want to wake up one day to a cell tower 20 feet from my door, that will lower my property values by 20%, increase the risk of fires and negatively impact public safety, the environment and the enjoyment of my home and neighborhood.

The Proposed Changes to County Code Title 22 are in direct conflict with the law. They eliminate Due Process and our Democratic tradition of timely prior notification and public hearings (please reference the First and Fifth Amendments of the U.S. Constitution and Article I, Section 7 of the California Constitution).

No insurance company in the world will cover damage from Radio-frequency/ElectroMagnetic Frequency (RF/EMF) radiation.

Contrary to what some may believe, the Telecommunications Act of 1996 does not give the FCC the authority to dismiss and violate the US Constitution or the California Constitution. The FCC is still subject to Federal Constitutional Law, and therefore applying a doctrine of preemption is against the law.

*Something that you may not understand that is very important! According to the Telecommunications Act; Title One is about broadband data. Title Two is about cell phones. Cell towers should not be about providing broadband data. Cell towers are about providing 5 bars on a cell phone for calls and texts. This requires only -85 dBi or 1-2 watts of power, not the current 10 thousand or more watts that many overpowered cell towers are emitting. The equipment most carriers and installers are proposing to install is designed to provide broadband data services. You have absolutely no legal obligation to provide broadband data from a cell tower. Wired internet or broadband data aka fiber optics to the premises is safer, 10 thousand times faster than 5G, more secure, less hackable, has a much, much smaller carbon footprint and much smaller waste stream contrasted to wireless, and is already paid for by our taxes. The wireless broadband industry is about profit over safety and about surveillance in order to market our private information.*

Please consider several questions before making a decision on this ordinance. Do you have requirements that the applicants must provide you with proof of significant gap in coverage, including hard data of six months of dropped calls? Have they provided independent data, (without the risk of falsified data) on the cumulative amount radio-frequency radiation from their proposed cell towers? How many carriers will be colocated on these installations? Who will monitor their output? There is currently no monitoring of cell towers, so we have no idea if the radiation exceeds the FCC's outdated and obsolete exposure limits. Neither the FCC, carriers or installers will be monitoring. Who will be liable for biological harm?

*Fire stations were given an exemption from cell tower installations. Why? Because the National Fire Fighters Association have been fighting cell antennas on their stations for the last 20 years, due to the harms firefighters were experiencing from working and sleeping in proximity to these antennas: brain fog, loss of cognitive function, insomnia, unexplained rage, anxiety, etc. Spect Scan studies of CA fire fighters showed injury and inflammation in the brains of all the fire fighters studied. Our fire fighters are the most fit among us. What about the folks, (who may not be fit), who work or inhabit the homes or buildings adjacent to these installations?*

Please add the requirement of true proven gap in cell phone service under Title II. You have the authority to make determinations on the best locations for cell towers and to deny unneeded and irresponsible placement of towers.

Please postpone your vote and revise the code so that you have codified grounds for denial based on requirements including significant gap in cell phone service, set backs, height requirements, restrictions in residential zones, proper notification, independent radiation monitoring, NEPA reviews, etc.

Another provision that could be easily applied to your county ordinance is to adopt the "Front Yard Rule". It works well in Elk Grove and says: "No small cell wireless communication facility shall be located immediately adjacent to, nor immediately across the street from, a front yard of any residential dwelling."

In light of this, it is also useful to remember that you do not need to hurry through this process. Indeed, it would serve all of us well to perform our due diligence in assessing all risks of densification of small cell, and macro cell antennas with a proper Environmental Impact Survey. We need the data on safety concerns, fire concerns, and any other possible risk that comes from this sort of densification. There is actually no real reason for the rush, other than huge profits for telecommunication companies.

Additionally, there ARE other, safer options to seriously consider: Optical fiber broadband (OFTP) will accomplish the infrastructural goals of the proposed Ordinance, including bridging the Digital Divide. OFTP is faster, safer, more private, more cyber-secure, has lower latency and it is vastly more energy efficient in contrast to wireless. OFTP must be a serious option for consideration in the BOS' forthcoming NEPA/CEQA EIS. **OFTP should be affordable, accessible and available to all! Fiber or cable will best bridge the digital divide, not more wireless facilities.**

In summary, I strongly OPPOSE the proposed changes to LA County Code Title 22; and I strongly support due diligence, proper notification, and the democratic tradition of public hearings.

The County Regional Planning actions will dramatically accelerate the densification of small cell facilities in the County. There will be no advance public notification and no public hearings. The long-established, open and public process for issuing conditional use permits for such facilities will be

replaced with a non-public "ministerial" process where the County rubber stamps approvals, stripping away our Constitutional property rights, and exposing a large segment of Los Angeles County to unregulated and unmonitored Radiofrequency and Electromagnetic Radiation (RF/EMF), and in so doing, violating numerous federal, state, and local laws.

It is extremely important that we put a PAUSE on the proposed Ordinance, amending Title 22 of the Los Angeles Planning and Zoning Code. To schedule a hearing on March 23 of the Planning Commission is simply too fast. Key and critical points have not been addressed.

This Ordinance will effectively codify the present illegal practice of bypassing over 30 years of a well-established and balanced Conditional Use Permit Registration system with an accelerated Ministerial Site Review of small cell and macro cell antennas installed on private property. This de facto practice is currently being challenged in the Los Angeles Superior Court in the case of Angela Sherick-Bright v. County of Los Angeles.

The ostensible justification for this precipitous rush to Ordinance is the FCC's shot clock deadlines that aim to accelerate densification of small cell and macro towers antennas emitting Radio Frequency/Electromagnetic Field (RF/EMF) radiation in high and dangerous concentrations within residential communities. **It seems pretty clear that the intention of the proposed Ministerial Site Review Application process, which will effectively replace Conditional Use Permits on new facilities, is to eliminate due process protections for the Los Angeles County community — namely, timely prior notification and an opportunity to be heard in public hearings,** which are guaranteed by the First and Fifth Amendments of the U.S. Constitution and Article I, Section 7 of the California Constitution.

In addition, by what legal authority and on what constitutional grounds can the BOS bypass and strip away due process protections of prior notification and public hearings?

Nowhere in the Telecommunications Act of 1996 is there authority to bypass and to violate the U.S. Constitution or the California Constitution guarantees of due process. To apply the doctrine of preemption as the Board of Supervisors is considering would be to establish the FCC as a supra-constitutional agency. It is not. The shot clock is an excuse. The Los Angeles Planning Authority simply doesn't want to bother to take the time to ensure an opportunity for the public to participate in a meaningful way. The fundamental First Amendment right of the public to be heard was reaffirmed in footnote #6 of the recently decided case of *Children's Health Defense v. FCC*.

**Please delay your vote, listen to your residents and well informed activists from 5G Free California. They have done their homework and have worthwhile contributions to share with you to improve your proposed wireless ordinance.**

Please look at the existing Ordinances in Malibu and Encinitas that can help guide this process in a way where best practices are addressed.

Thank you.

Sincerely,  
Lesley Weinstock, Physician Assistant

**More points of information and questions to consider:**

- It seems the BOS doesn't have legal authority to bypass and strip away due process protections of prior notification and public hearings. Nowhere in the 1996 Telecommunications Act is the authority to bypass and to violate the U.S. Constitution or the California Constitution guarantees of due process.
- The 1996 Telecommunications Act contains no provision for local communities to allow telecom purveyors to convert easements to property rights without just compensation to private property owners.
- Has there been any determination, affirmative or negative, relating to the necessity of assessing the environmental impacts of this project through an EIS interagency consultative process under the California Environmental Quality Act (CEQA)? Has the BOS complied with its obligations under the federal National Environmental Policy Act (NEPA), including coordinating with other concerned federal agencies, recognizing that there is substantial federal involvement in Los Angeles County? (socalled NEPA "federal handle.")
- Given its record of fire catastrophes, Los Angeles County is justifiably concerned with fire prevention and management. This area is well within the County's authority, jurisdiction, and control. For example, what special protections does the Ordinance provide for fires resulting from combustion of terpenes in conifers? Scientific studies<sup>2</sup> document that continuous RF/EMF radiation exposure is closely tied with increased terpene production in conifers. Terpenes are a combustible organic compound. The Ordinance utterly ignores this risk which would need to be addressed in any CEQA/NEPA compliant EIS. There is no question that Los Angeles County has an absolute right to take reasonable protections for fire protection and management, which are certainly not preempted by the 1996 Telecommunications Act, and addressed in the present Los Angeles Fire Ordinance. Again, from the perspective of the First and Fifth Amendments noted above, is the Board of Supervisors seriously proposing to deny the public its right of timely notification and hearing before approving a program that will impose pervasive and intensifying fire risks?
- The contention that small cell and macro tower densification is essential for emergency response is bogus. As is well documented by the Resolution of 2 E.g. see "Influence of microwave frequency electromagnetic radiation on terpene emission and content in aromatic plants" <sup>4</sup> the International Association of Fire Fighters, there are far safer well-established alternatives to addressing major fire hazards than by amplifying them.
- What special dangers do the proposed amendments pose for airports in Los Angeles County? How can the BOS reconcile the serious conflicts with current FAA regulations?
- The proposed amendment stipulates that it must comply with existing federal laws, which include: the Historic Preservation Act, the Endangered Species Act, the Americans with Disabilities Act, the Fair Housing Amendments Act, to name a few. None of these federal statutes are preempted by the 1996 Telecommunications Act. They are entitled to coequal dignity and consideration. The BOS cannot override these federal statutes by some ministerial gimmick, simply because it doesn't want to take the time to devise a reasonable and balanced solution.
- What provision has been made for insurance for RF/EMF related harms? What consideration has been given to a bonding requirement, recognizing the hazards of RF/EMF radiation? What process is contemplated to coordinate with the Board of Health to report, investigate, and arrange for compensation of the thousands of victims of RF/EMF radiation exposure over the coming years? What provision is being made to deploy best available community wide radiation monitoring devices and methodologies, recognized by the National Spectrum Management Association, so that the Los

Angeles County Health Department will even know the levels of RF/EMF radiation to which County communities are being exposed?

- Why does the BOS not take the time to study carefully existing best ordinance practices, such as being implemented in Scarsdale, Malibu, Encinitas, and other local communities which include setbacks in residential areas and other protective features?
- The Planning Department and BOS are advised to take a bold and innovative additional step: that is seriously to consider providing incentives for a far superior broadband option: optical fiber to the premises (OFTP). Optical fiber broadband will accomplish the infrastructural goals of the proposed Ordinance, including bridging the Digital Divide, while optimizing the beneficial uses of wireless and minimizing its hazards. OFTP is faster, safer, private (Accelerating densification of small cell and macro towers raises serious unexamined questions regarding the encroachment on privacy protected under the CA Consumer Privacy Act. Many of these problems may be avoided under an OFTP framework.), more cybersecure, lower latency, energy efficient, and climate change friendly. OFTP must be a serious option for consideration in the BOS' forthcoming NEPA/CEQA EIS. (See: Timothy Schoechle, Reinventing Wires: The Future of Landlines and Networks)

In conclusion, given that the present law and regulations pertaining to RF/EMF are in a state of flux, it would behoove us to remember that the last thing one should do in times of chaos is to plunge in more deeply. The precipitate haste by which Title 22 is being promoted provides a telltale clue to its overall character. The BOS needs to pause and postpone; to think things through clearly and responsibly, especially given the long-term consequences; where necessary to consult with independent, uncompromised experts, without conflicts of interest; to engage the public; and to prevent and correct an imminent folly. Los Angeles County and its Board of Supervisors will never regret taking the time at this critical juncture to discover the path of reasonable balance.

## Alyson Stewart

---

**From:** Heidi Henkle, L.Ac. <heidihenkle@gmail.com>  
**Sent:** Monday, March 21, 2022 7:47 AM  
**To:** DRP Ordinance Studies  
**Subject:** STOP 5G Rollout in LA - DANGEROUS

**CAUTION:** External Email. Proceed Responsibly.

To Whom it May Concern:

Will I wake up one day to a macro cell tower being built 20 feet from my door? Will you??

The Proposed Changes to County Code Title 22 are in direct conflict with the law. They eliminate Due Process and our Democratic tradition of timely prior notification and public hearings (please reference the First and Fifth Amendments of the U.S. Constitution and Article I, Section 7 of the California Constitution).

Contrary to what some may believe, the Telecommunications Act of 1996 does not give the FCC the authority to dismiss and violate the US Constitution or the California Constitution. The FCC is still subject to Federal Constitutional Law, and therefore applying a doctrine of preemption is against the law.

In light of this, it is also useful to remember that we do not need to hurry through this process. Indeed, it would serve all of us well to perform our due diligence in assessing all risks of densification of small cell, and macro cell antennas with a proper Environmental Impact Survey. We need the data on safety concerns, fire concerns, and any other possible risk that comes from this sort of densification. There is actually no real reason for the rush, other than perhaps profits for telecommunication companies.

Additionally, there ARE other, safer options to seriously consider: Optical fiber broadband (OFTP) will accomplish the infrastructural goals of the proposed Ordinance, including bridging the Digital Divide. OFTP is faster, safer, more private, more cybersecure, has lower latency, is energy efficient, and climate change friendly. OFTP must be a serious option for consideration in the BOS' forthcoming NEPA/CEQA EIS.

In short, I strongly OPPOSE the proposed changes to LA County Code Title 22; and I strongly support due diligence, proper notification, and the Democratic tradition of public hearings.

Respectfully yours,

Heidi Henkle

## Alyson Stewart

---

**From:** embodymaom@aol.com  
**Sent:** Monday, March 21, 2022 11:48 AM  
**To:** DRP Ordinance Studies  
**Subject:** 5G tower ordinance

**CAUTION:** External Email. Proceed Responsibly.

To the LA County Board of Supervisors,

I oppose Title 22 Draft Wireless Ordinance and urge you to delay approving the ordinance until these problems can be addressed and our voices, the people you work for, can be heard.

As I am aware, the Board of Supervisors do not have the authority to bypass and strip away due process protections of prior notification and public hearings. Nowhere in the 1996 Telecommunications Act is there authority to bypass and violate the US Constitution or the California Constitution guarantees of due process.

If you continue, and pass this ordinance, without the peoples right to due process then each one of you who votes for this ordinance is subject to a personal lawsuit.

In conclusion, the BOS needs to pause and postpone; to think things through clearly and responsibly, especially given the long term consequences; where necessary to consult with independent, uncompromised experts; to engage the public; and to prevent and correct an imminent folly. Los Angeles County and it's, voted in, Board of Supervisors will never regret taking the time at this critical juncture to discover the path of reasonable balance.

Thank you,

Beverly Buehner

## Alyson Stewart

---

**From:** Amber <activeclicker@roadrunner.com>  
**Sent:** Monday, March 21, 2022 4:27 PM  
**To:** Elida Luna; DRP Ordinance Studies; DRP Info; firstdistrict@bos.lacounty.gov; HollyJMitchell@bos.lacounty.gov; Sheila; FourthDistrict@bos.lacounty.gov; Barger, Kathryn  
**Subject:** Item 5: Project No. 2021-002931-(1-5) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance

**CAUTION:** External Email. Proceed Responsibly.

**To: Los Angeles the County Department of Regional Planning & Los Angeles County Board of Supervisors**

**Item 5:** [Project No. 2021-002931-\(1-5\) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance](#)

Will I wake up one day to a macro cell tower being built 20 feet from my door? Will you??

The Proposed Changes to County Code Title 22 are in direct conflict with the law. They eliminate Due Process and our Democratic tradition of timely prior notification and public hearings (please reference the First and Fifth Amendments of the U.S. Constitution and Article I, Section 7 of the California Constitution).

Contrary to what some may believe, the Telecommunications Act of 1996 does not give the FCC the authority to dismiss and violate the US Constitution or the California Constitution. The FCC is still subject to Federal Constitutional Law, and therefore applying a doctrine of preemption is against the law.

In light of this, it is also useful to remember that we do not need to hurry through this process. Indeed, it would serve all of us well to perform our due diligence in assessing all risks of densification of small cell, and macro cell antennas with a proper Environmental Impact Survey. We need the data on safety concerns, fire concerns, and any other possible risk that comes from this sort of densification. There is actually no real reason for the rush, other than perhaps profits for telecommunication companies.

Additionally, there ARE other, safer options to seriously consider: Optical fiber broadband (OFTP) will accomplish the infrastructural goals of the proposed Ordinance, including bridging the Digital Divide. OFTP is faster, safer, more private, more cybersecure, has lower latency, is energy efficient, and climate change friendly. OFTP must be a serious option for consideration in the BOS' forthcoming NEPA/CEQA EIS.

In short, I strongly OPPOSE the proposed changes to LA County Code Title 22; and I strongly support due diligence, proper notification, and the Democratic tradition of public hearings.

Respectfully,

Amber Cannon

**Alyson Stewart**

---

**From:** Josie Kelly <josie.josiekelly@gmail.com>  
**Sent:** Tuesday, March 22, 2022 10:29 AM  
**To:** DRP Ordinance Studies  
**Subject:** 5G

CAUTION: External Email. Proceed Responsibly.

I am 100% opposed to 5G in los Angeles county- especially topanga canyon Josie Kelly L.M.F.T. C.H.P.

## Alyson Stewart

---

**From:** Mona Jean Cedar <monajean@pasdasl.com>  
**Sent:** Tuesday, March 22, 2022 11:54 AM  
**To:** Elida Luna; DRP Ordinance Studies; DRP Info; firstdistrict@bos.lacounty.gov; HollyJMitchell@bos.lacounty.gov; Sheila; FourthDistrict@bos.lacounty.gov; Barger, Kathryn  
**Subject:** OPPOSE Project No. 2021-002931-(1-5) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance

**CAUTION:** External Email. Proceed Responsibly.

**To: Los Angeles the County Department of Regional Planning &  
Los Angeles County Board of Supervisors**

**Item 5:** [Project No. 2021-002931-\(1-5\) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance](#)

Dear Los Angeles County Department of Regional Planning & Los Angeles County Board of Supervisors:

In Malibu, a city that has burned twice in the last 15 years because of telecommunications structural and/or electrical engineering failures, we brought in a team comprised of an attorney, an electrical engineer, and a fire safety consultant. Together they discovered something you need to know about for the fire protection of Los Angeles County, of which Malibu and the surrounding cities are a part. The telecommunications industry is exempt from multiple electric and fire safety codes at the federal, state and Los Angeles County level. Therefore, Malibu accepted the responsibility for requiring electrical and structural engineering rigor at the front end (the application stage) for all cell towers, macro and small cells. We are asking our counterparts in LA County to do the same.

With the help of our expert team we came up with what is known as the Electric Fire Safety Protocol and we urge you to utilize the same language that was created for Malibu. That protocol is included in an alternate ordinance that is being offered to Los Angeles County by attorney Julian Gresser. We further urge you to include this protocol along with the following:

- Notice and hearing required for all but eligible facilities and backup generators for towers
- Need better and fuller application content requirements, even if wrongly treat as ministerial
- Must ensure all safety precautions have been made, including fire and electrical hazards, before permit is granted.
- Ensure all required environmental reviews have been conducted and any necessary other permits have been obtained before land use authorization is considered or at least granted
- Ensure all required historical reviews have been conducted and any necessary other permits have been obtained before land use authorization is considered or at least granted
- Need at least 1500-foot setback from all residential areas and schools; allow your residents and schoolchildren time to escape should a cell tower catch fire, requiring the power to be cut before it can be fought
- Ensure proper fall zones (at least 1.20 times the height of any tower)

Most cities do not realize that telecom is policing itself when it comes to fire safety. Also, most people don't realize that cell towers can catch fire and when they do, because they are electrical devices, they cannot be fought through conventional means. The power has to be cut and that takes between 10 and 60 minutes. During that time, imagine if there is a Santa Ana wind. People need time to escape and that is why we are attempting to further

protect our residential areas in Malibu. We urge the Los Angeles County Planning commission and Board of Supervisors to do the same.

NEC, the National Electric Code, is the basis for other electric codes in the state of California. Every County and City is quick to say that they adhere to all applicable electric and fire safety codes. And this is certainly a noble goal. The problem is when there is an exemption within those codes that most often the cities and counties don't know about it. For all intents and purposes telecom is policing telecom and there is no state in this country where fire is a bigger risk and a bigger threat than in California. So please Institute of electrical and structural safety through the Electric Fire Safety protocol so that we can make Los Angeles County a less destructive place to call home.

The argument is being made that the small cell buildout is needed so everyone can call 911. The CPUC's redundancy program requires mandatory backup for macro towers. That means when the power is cut the macro towers will still operate. Many of the small cells will get waivers because it is extremely difficult and dangerous to put backup generators with fuel in the public right-of-way. Small cells are not a means to secure communication. The CPUC has already taken care of that with the macro towers.

Here's to a safer Los Angeles County!

## Alyson Stewart

---

**From:** Bob Chirpin <gldlight@hotmail.com>  
**Sent:** Tuesday, March 22, 2022 11:58 AM  
**To:** DRP Ordinance Studies  
**Subject:** Re: Expansion of wireless transmitters & Insect Apocalypse IMPORTANT.. Research studies connecting EMF radiation and insect decline!

**CAUTION:** External Email. Proceed Responsibly.

Los Angeles Planning Commission,

PLEASE REVIEW STUDIES BEFORE MAKING A DECISION ON EXPANSION OF WIRELESS TRANSMITTERS THROUGHOUT LOS ANGELES COUNTY!

Below, are a number of studies showing the link between EMF radiation and the destruction of the Insect Kingdom! The negative effects on Honey Bees is profound!

If, the Insect Kingdom is destroyed, the entire Natural Order will be terribly harmed and food production will be negatively impacted!

WITH THE PASSAGE OF BROADBAND EXPANSION, THE DESTRUCTION TO BIOLOGICAL LIFE WILL BE ACCELERATED 100- FOLD AND WILL RESULT IN AN ENVIRONMENTAL CATASTROPHE RESULTING IN THE REDUCTION OF FOOD PRODUCTION AND OTHER BIOLOGICAL NECESSITIES, ALL FOR THE SAKE OF CONVEINANCE! 5-G MUST BE SET UNDERGROUND WITH FIBER OPTIC CABLES, NOT ABOVE GROUND WITH TOWERS, TRANSMITTERS AND OTHER DEVICES!

THANK YOU!

Kumar NR, Sangwan S, Badotra P. Exposure to cell phone radiations produces biochemical changes in worker honey bees. *Toxicol Int.* 2011;18(1):70-72. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3052591>

Changes in honeybee behaviour and biology under the influence of cellphone radiations. Ved Parkash Sharma<sup>1</sup> and Neelima R. Kumar. [https://www.stralingsarmvlaanderen.org/resources/Ved-Parkash-Sharma\\_a49823b5aa.pdf](https://www.stralingsarmvlaanderen.org/resources/Ved-Parkash-Sharma_a49823b5aa.pdf)

Bees, Birds and Mankind: Destroying Nature by Electrosmog. Ulrich Warnke. [https://kompetenzinitiative.com/wp-content/uploads/2019/08/ki\\_beesbirdsandmankind\\_screen.pdf](https://kompetenzinitiative.com/wp-content/uploads/2019/08/ki_beesbirdsandmankind_screen.pdf)

Mobile phone-induced honeybee worker piping, Daniel Favre, <https://link.springer.com/content/pdf/10.1007/s13592-011-0016-x.pdf>

Disturbing Honeybees' Behavior with Electromagnetic Waves, Daniel Favre, [https://stralingbewust-go.nl/images/Website/Favre\\_Disturbing\\_Honeybees\\_with\\_RF-EMF\\_2017.pdf](https://stralingbewust-go.nl/images/Website/Favre_Disturbing_Honeybees_with_RF-EMF_2017.pdf)

Does enhanced electromagnetic radiation disturb honeybees' behaviour? Observations during New Year's Eve 2019. Favre and Johansson, [https://www.granthaalayahpublication.org/journals/index.php/granthaalayah/article/download/IJRG\\_20\\_B11\\_3868/2236](https://www.granthaalayahpublication.org/journals/index.php/granthaalayah/article/download/IJRG_20_B11_3868/2236)

Impact of Mobile Phones on the Density of Honeybees, Sainudeen Pattazhy, <http://www.stopsmartmetersbc.com/wp-content/uploads/2017/04/Impact-of-mobile-phones-on-the-density-of-honeybees-by-Sainudeen-Sahib-S.-Feb.09-2011.pdf>

Electromagnetic radiation as an emerging driver factor for the decline of insects, Alfonso Balmori, <https://stop5ginternational.org/wp-content/uploads/2021/02/Insects-STOTEN.pdf>

Biologische Wirkungen elektromagnetischer Felder, Alain Thill, [https://zfn.mpg.de/data/Reihe\\_C/34/ZNC-1979-34c-0616.pdf](https://zfn.mpg.de/data/Reihe_C/34/ZNC-1979-34c-0616.pdf)

GSM 900 MHz radiation inhibits ants' association between food sites and encountered cues, Marie-Claire Cammaerts, et al. [https://www.researchgate.net/profile/David\\_Cammaerts/publication/221769798\\_GSM\\_900\\_MHz\\_radiation\\_inhibits\\_ants'\\_association\\_between\\_food\\_sites\\_and\\_encountered\\_cues/links/5c2b8899458515a4c70584a3/GSM-900-MHz-radiation-inhibits-ants-association-between-food-sites-and-encountered-cues.pdf](https://www.researchgate.net/profile/David_Cammaerts/publication/221769798_GSM_900_MHz_radiation_inhibits_ants'_association_between_food_sites_and_encountered_cues/links/5c2b8899458515a4c70584a3/GSM-900-MHz-radiation-inhibits-ants-association-between-food-sites-and-encountered-cues.pdf)

Ants can be used as bio-indicators to reveal biological effects of electromagnetic waves from some wireless apparatus, Marie-Claire Cammaerts, and Olle Johansson <https://www.stopumts.nl/pdf/cammaertsjohansson2013.pdf>

Changes in *Paramecium caudatum* (Protozoa) near a switched-on GSM telephone, Marie-Claire Cammaerts, [https://www.researchgate.net/profile/Roger\\_Cammaerts/publication/51109336\\_Changes\\_in\\_Paramecium\\_caudatum\\_Protzoa\\_near\\_a\\_switched-on\\_GSM\\_telephone/links/5481d58e0cf2e5f7ceaa5ad1.pdf](https://www.researchgate.net/profile/Roger_Cammaerts/publication/51109336_Changes_in_Paramecium_caudatum_Protzoa_near_a_switched-on_GSM_telephone/links/5481d58e0cf2e5f7ceaa5ad1.pdf)

Food collection and response to pheromones in an ant species exposed to electromagnetic radiation, Cammaerts et al., [https://www.smartmetereducationnetwork.com/uploads/environmental-effects/Ants\\_and\\_EMF\\_2012\\_Cammaerts\\_Electromagnetic\\_Biology\\_and\\_Medicine%5B1%5D.pdf](https://www.smartmetereducationnetwork.com/uploads/environmental-effects/Ants_and_EMF_2012_Cammaerts_Electromagnetic_Biology_and_Medicine%5B1%5D.pdf)

Effect of man-made electromagnetic fields on common Brassicaceae *Lepidium sativum* (cress d'Alinois) seed germination: a preliminary replication, study, Cammaerts and Johansson, <https://ppct.caicyt.gov.ar/index.php/phyton/article/viewFile/8118/7330>

Effect of GSM 900-MHz Mobile Phone Radiation on the Reproductive Capacity of *Drosophila melanogaster*, Dimitris Panagopoulos et al., [https://www.researchgate.net/profile/Lukas\\_Margaritis/publication/232032352\\_Effect\\_of\\_GSM\\_900-MHz\\_Mobile\\_Phone\\_Radiation\\_on\\_the\\_Reproductive\\_Capacity\\_of\\_Drosophila\\_melanogaster/links/548aac1e0cf2d1800d7ab95c/Effect-of-GSM-900-MHz-Mobile-Phone-Radiation-on-the-Reproductive-Capacity-of-Drosophila-melanogaster.pdf](https://www.researchgate.net/profile/Lukas_Margaritis/publication/232032352_Effect_of_GSM_900-MHz_Mobile_Phone_Radiation_on_the_Reproductive_Capacity_of_Drosophila_melanogaster/links/548aac1e0cf2d1800d7ab95c/Effect-of-GSM-900-MHz-Mobile-Phone-Radiation-on-the-Reproductive-Capacity-of-Drosophila-melanogaster.pdf)

Effect of microwave exposure on the ovarian development of *Drosophila melanogaster*, Panagopoulos, [https://www.researchgate.net/profile/Dimitris\\_Panagopoulos3/publication/221864020\\_Effect\\_of\\_Microwave\\_Exposure\\_on\\_the\\_Ovarian\\_Development\\_of\\_Drosophila\\_melanogaster/links/5b97c57f92851c4ba80e6cbc/Effect-of-Microwave-Exposure-on-the-Ovarian-Development-of-Drosophila-melanogaster.pdf](https://www.researchgate.net/profile/Dimitris_Panagopoulos3/publication/221864020_Effect_of_Microwave_Exposure_on_the_Ovarian_Development_of_Drosophila_melanogaster/links/5b97c57f92851c4ba80e6cbc/Effect-of-Microwave-Exposure-on-the-Ovarian-Development-of-Drosophila-melanogaster.pdf)

Effects of electromagnetic fields on the reproductive capacity of *Drosophila melanogaster*, Panagopoulos and Margaritis, [https://www.researchgate.net/profile/Dimitris\\_Panagopoulos3/publication/313165566\\_Effects\\_of\\_electromagnetic\\_fields\\_on\\_the\\_reproductive\\_capacity\\_of\\_Drosophila\\_melanogaster/links/5bb32a8ea6fdccd3cb817619/Effects-of-electromagnetic-fields-on-the-reproductive-capacity-of-Drosophila-melanogaster.pdf](https://www.researchgate.net/profile/Dimitris_Panagopoulos3/publication/313165566_Effects_of_electromagnetic_fields_on_the_reproductive_capacity_of_Drosophila_melanogaster/links/5bb32a8ea6fdccd3cb817619/Effects-of-electromagnetic-fields-on-the-reproductive-capacity-of-Drosophila-melanogaster.pdf)

Bioeffects of mobile telephony radiation in relation to its intensity or distance from the antenna, Panagopoulos et al.,

[https://www.researchgate.net/profile/Lukas\\_Margaritis/publication/43180500\\_Bioeffects\\_of\\_mobile\\_telephony\\_radiation\\_in\\_relation\\_to\\_its\\_intensity\\_or\\_distance\\_from\\_the\\_antenna/links/548aac200cf2d1800d7ab95f.pdf](https://www.researchgate.net/profile/Lukas_Margaritis/publication/43180500_Bioeffects_of_mobile_telephony_radiation_in_relation_to_its_intensity_or_distance_from_the_antenna/links/548aac200cf2d1800d7ab95f.pdf)

Comparison of bioactivity between GSM 900 MHz and DCS 1800 MHz mobile telephony radiation, Panagopoulos et al., <https://www.tandfonline.com/doi/abs/10.1080/15368370701205644?journalCode=iebm20>

Cell death induced by GSM 900-MHz and DCS 1800-MHz mobile telephony radiation, Panagopoulos et al., <http://multimedia.biol.uoa.gr/Kyttariki/EMR-GROUP/article-oct-2006.pdf>

ELF alternating magnetic field decreases reproduction by DNA damage induction, Panagopoulos et al., <http://www.es-uk.info/wp-content/uploads/2018/06/Panagopoulos-et-al-CBB-2013.pdf>

Comparison of biological effects between continuous and intermittent exposure to GSM-900-MHz mobile phone radiation: Detection of apoptotic cell-death features, Panagopoulos et al., <http://multimedia.biol.uoa.gr/kyttariki/EMR-GROUP/EMR-GROUP/Chavdoula-et-al-2010.pdf>

Effects of Electromagnetic Fields on the Reproductive Capacity of Drosophila Melanogaster, Panagopoulos and Margaritis, [https://www.researchgate.net/profile/Dimitris-Panagopoulos-3/publication/313165566\\_Effects\\_of\\_electromagnetic\\_fields\\_on\\_the\\_reproductive\\_capacity\\_of\\_Drosophila\\_melanogaster/links/5bb32a8ea6fdccd3cb817619/Effects-of-electromagnetic-fields-on-the-reproductive-capacity-of-Drosophila-melanogaster.pdf](https://www.researchgate.net/profile/Dimitris-Panagopoulos-3/publication/313165566_Effects_of_electromagnetic_fields_on_the_reproductive_capacity_of_Drosophila_melanogaster/links/5bb32a8ea6fdccd3cb817619/Effects-of-electromagnetic-fields-on-the-reproductive-capacity-of-Drosophila-melanogaster.pdf)

Analyzing the health impacts of modern telecommunications microwaves, Panagopoulos, [http://media.wit-tank.com/4cb542761d/panagopoulos-nova-2011-adv\\_med\\_biol-review-chapter.pdf](http://media.wit-tank.com/4cb542761d/panagopoulos-nova-2011-adv_med_biol-review-chapter.pdf)

Mobile Telephony Radiation Effects on Living Organisms, Panagopoulos and Margaritis, <https://www.livingplanet.be/Panagopoulos2008b.pdf>

Gametogenesis, Embryonic and Post-Embryonic Development of Drosophila Melanogaster, as a Model System for the Assessment of Radiation and Environmental Genotoxicity, Panagopoulos, [https://www.researchgate.net/profile/Dimitris-Panagopoulos-3/publication/287889577\\_Gametogenesis\\_embryonic\\_and\\_post-embryonic\\_development\\_of\\_drosophila\\_melanogaster\\_as\\_a\\_model\\_system\\_for\\_the\\_assessment\\_of\\_radiation\\_and\\_environmental\\_genotoxicity/links/5b97c6dca6fdcc59bf846823/Gametogenesis-embryonic-and-post-embryonic-development-of-drosophila-melanogaster-as-a-model-system-for-the-assessment-of-radiation-and-environmental-genotoxicity.pdf](https://www.researchgate.net/profile/Dimitris-Panagopoulos-3/publication/287889577_Gametogenesis_embryonic_and_post-embryonic_development_of_drosophila_melanogaster_as_a_model_system_for_the_assessment_of_radiation_and_environmental_genotoxicity/links/5b97c6dca6fdcc59bf846823/Gametogenesis-embryonic-and-post-embryonic-development-of-drosophila-melanogaster-as-a-model-system-for-the-assessment-of-radiation-and-environmental-genotoxicity.pdf)



Virus-free. [www.avast.com](http://www.avast.com)

## Alyson Stewart

---

**From:** julian juliangresser <juliangresser77@gmail.com>  
**Sent:** Monday, March 21, 2022 6:16 PM  
**To:** DRP Ordinance Studies; julian juliangresser  
**Cc:** Ben Levi; Julie Levine; Marin Lutz; W. Scott McCollough; Susan Foster; Betsy Lehrfeld; Robert Berg  
**Subject:** Addendum and Appendices in Support of March 10 Filing by 5G Free California--For Presentation at March 23 Hearing of the Planning Commission  
**Attachments:** FINAL LA County BOS Addendum 2022-03-21.pdf

**CAUTION:** External Email. Proceed Responsibly.

Dear Sir or Madam,

Thank you for your consideration of the attached, which supplements our earlier comments filed on March 10, 2022. We will discuss the most salient points in the forthcoming March 23 Hearing of the Planning Commission on Title 16 and Title 22 proposed amendments, and will be available to respond to any questions of staff.

Sincerely,

Julian Gresser Counsel for 5G Free California

--

Julian Gresser Attorney at Law/Of Counsel, Swankin & Turner/Co-founder [BroadBand International Legal Action Network \(BB-ILAN\)](#)/CEO/Chairman/Big Heart Technologies / Office: 1-805-563-3226 | Cell: 1-805-708-1864

[juliangresser77@gmail.com](mailto:juliangresser77@gmail.com) | [www.bighearttechnologies.com](http://www.bighearttechnologies.com) | [www.alliancesfordiscovery.org](http://www.alliancesfordiscovery.org) | [www.resiliencemultiplier.com](http://www.resiliencemultiplier.com)

Attention: The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited. If you received this in error, please contact the sender and delete the material from any computer.

To: LA County Planning Commission/Board of Supervisors (BOS)

From: Julian Gresser, Counsel to 5G Free California

Re: Addendum and Appendix to Comments by Julian Gresser, Counsel to 5G Free California,  
Submitted on March 10, 2022 at the Topanga City Council Town Meeting

Including Herein Proposed Required Principles and Categories in Wireless Applications, and  
Affirmative Findings by Los Angeles County in Wireless Applications Pursuant to FCC Shot  
Clock Regulations

Date: March 21, 2022

Dear Members of the Board of Supervisors of Los Angeles County and Members of the Planning  
Commission:

This is an Addendum to our earlier Comments submitted into the record on March 10, 2022, and  
hereby incorporated by reference. It also contains the following appendices:

- Appendix 1 — Problematic Provisions in Title 22 Amendments with Proposed Remedies (all  
relevant provisions also apply to Title 16)
- Appendix 2 — Problematic Provisions in Title 16 Amendments with Proposed Remedies
- Appendix 3 — March 10 filing by Julian Gresser, Counsel to 5G Free California —  
Comments at Topanga City Council Town Meeting — Evening March 9, 2022
- Appendix 4 — Malibu Resolution Section 8: A Model for Standard Conditions
- Appendix 5 — Letter from Susan Foster Regarding Fire Hazards, Prevention, and  
Management

The March 10 filing documented the serious infringements on U.S. First, Fifth, and Fourteenth  
Amendment Constitutional, and California State Constitutional (Article 2, Section 7) due process  
protections, and other substantive violations of law that will result if the Title 16 and Title 22  
amendments are adopted in their present form. This Addendum with Appendices offers Guiding  
Principles for the BOS, practical Procedures for Wireless Permit Applicants, and Required  
Findings by the Planning Department and BOS to restore a reasonable balance protective of  
public and environmental health and integrity, in a manner that is consistent with the FCC's Shot  
Clock regulations and California law.

## **ADDENDUM**

### **Principles**

1. The BOS is relying on public statements by the FCC and the FDA, representing that it is the  
official policy of both these agencies that public exposure to Radio Frequency and  
Electromagnetic Field (RF/EMF) radiation emission levels within the FCC's present thermal  
safety standard (which does not address biological effects) is safe; and further, that the FDA

has adopted the same safety standard in implementing its own regulations for radiation emitting devices.

2. Notwithstanding, the BOS recognizes that it has an affirmative fiduciary duty consistent with the Oath of Office, the California Constitution and state laws, to protect the public health and wellbeing of the Los Angeles County Community, and to uphold due process of law.
3. The BOS has the right and power under the 1996 Telecommunications Act, consistent with California law, to impose certain reasonable conditions on the location of small cell and macro-cell towers and other wireless facilities, so long as telecom applicants cannot meet their burden of proof by demonstrating that such conditions constitute an effective prohibition of the service.

## **Ministerial Review**

The Proposed Amendments to Title 16 and Title 22 will codify the present administrative practice now being implemented without legal authority in Los Angeles County of replacing the well-established Conditional Use Permit Procedures, which are discretionary, with a non-discretionary Ministerial Site Review Process which will eliminate notification and hearing requirements. In order for the Ministerial Review process to have full legal force and effect, the Los Angeles County Planning Department must make certain Findings of Fact and Certification, based on clear and unambiguous criteria set forth in a Ministerial Wireless Site Application, and in a manner that complies with the federal Shot Clock regulations. The following highlights the application requirements and standard conditions that must be incorporated into the Ministerial Site Review Process, as specified in Appendices 1 and 2.

## **Wireless Facility Application Requirements**

- **Certification of Truthfulness.** Applicant must certify under penalty of perjury under Federal and State [False Claims Act](#), supported by documented evidence, of full compliance with all items on the Application Check List (noted below).
- **Compliance with federal law.** Section 13 A.4 of the proposed Title 22 amendments states: “comply with all applicable federal and state laws and regulations regarding wireless facilities.” The following federal laws and regulations apply to wireless facilities.
  - Historic Preservation Act—Many sites in Los Angeles County, such as View Park, are on the Historic Sites Registry. (See: [Angela Sherick-Bright v. Los Angeles County](#)).
  - Endangered Species Act.
  - Americans with Disabilities Act (ADA)—Many owners and residents of Los Angeles County are currently being harmed, or are in Imminent Danger of being harmed, by RF/EMF radiation, and have rights under the ADA and the FHAA (below).
  - Fair Housing Amendments Act (FHAA).
  - All relevant FAA regulations (See [Angela Sherick-Bright v. Los Angeles County](#)).
  - Small cell facilities must comply with [FCC 47CFR1.1307\(b\)](#) requiring an Environmental Assessment.

## **Note on RF/EMF Safety Standards and Regulations of U.S. Department of Health and Human Safety (HHS) and Federal Food and Drug Administration (FDA)**

The potential for RF/EMF radiation to adversely affect public health is the foundation of [21 USC 360ii](#) which states in part:

*“The Secretary shall establish and carry out an electronic product radiation control program designed to protect the public health and safety from electronic product radiation. As a part of such program, he shall—... (2) plan, conduct, coordinate, and support research, development, training, and operational activities to minimize the emissions of and the exposure of people to, unnecessary electronic product radiation.”*

This HHS mandatory regulation clearly suggests a major federal concern and imminent hazard of exposing large numbers of individuals to RF/EMF radiation from certain electronic devices which include wireless facilities covered by the proposed amendments to Title 22.

- **Compliance with California state and local law**
  - Compliance with all existing Conditional Use Permits (See Ordinance Section 6 B).
  - Consistency with [L.A. County General Plan](#).
  - CEQA—presentation of valid EIS/Environmental Assessment/Negative Declaration.

### **Note:**

On April 6, 2022, the BOS will consider the Negative Declaration prepared for this project, pursuant to the California Environmental Quality Act, that assesses impacts of proposed amendments to Los Angeles County Codes, Title 21-Subdivisions and Title 22-Planning and Zoning to reduce damage to life and property from wildfires in unincorporated Los Angeles County. This Negative Declaration is made arbitrarily and without a foundation of substantial evidence, as required by CEQA law and practice, and cannot be used to circumvent an Applicant’s certification of full compliance with CEQA in order to qualify for Ministerial Review.

- Presentation of best alternatives to the project that are safe, fast, energy efficient, cybersecure, private, and climate change friendly that support LAC’s and federal policy relating to closing the Digital Divide.
- Disclosure of relationship of the specific application to a larger Wireless Plan.
- Disclosure of any larger Wireless Plan, including financiers and financial institutions behind it.
- California Consumer Privacy Act—documentation of full compliance including provision of easy opportunity for consumers affected by the proposed project to opt out.
- Applicant’s certification that it will not violate by the installation and operation of wireless facilities the following state laws concerning especially vulnerable populations:
  - Delivery of safe-learning environments for children and teachers in schools.

- Trespass, public and private nuisance, assault and battery, endangerment of elderly persons, endangerment of persons with disabilities, endangerment of elderly persons, for which there are penalties under the CA Penal Code.
- **Ministerial Review Exceptions.** California law currently allows CEQA Ministerial Review exceptions in cases of minor modifications permitted under the Spectrum Act and for back up emergency generators. In almost all other instances, notice and hearing requirements must be followed.
- **Local Law Compliance.** Applicants subject to Ministerial Review must certify full compliance with the following in the Application Requirements:
  - Consistency with Los Angeles County General Plan.
  - Special protections for the Coastal Zone and Santa Monica Mountains.<sup>1</sup>
  - Los Angeles County Fire Ordinance new provision: Applicants agree to provide proof that inspection and sign off on the proposed facility will be made by a certified electrical and structural engineer.
  - Sign off by the Los Angeles Department of Health on all macro tower permits of any kind, in addition to proposed regulations of small cells.
  - Effective monitoring and measurement of RF/EMF emission standards. Recently the Planning Staff proposed deleting J.1 condition ([see Title 22 Exhibit A](#)) after the deadline for public notice and comment released a proposal to eliminate a 5 year RF/EMF emission report for each tower. The LA Planning Commission cannot legally exempt the County's obligation under current FCC policy to monitor effectively and measure accurately RF/EMF radiation emissions to verify compliance with FCC interference and non-biological thermal standard.

**Note:** The proposed action by the Planning Commission made in preparation for the March 23 Hearing is in this respect fatally flawed. As the publication of the Staff recommendations followed the deadline for public comments, this deadline must be extended for a reasonable time following the publication of the Staff Report.

**Best Available Practices: Application Requirements and Standard Conditions.** In order to qualify for Ministerial Review, an Applicant must certify compliance with the following:

- **Monitoring and Metrics**—Applicants are required to continuously monitor RF/EMF radiation emissions from small cell and macro towers covered by Titles 16 and 22 using best available monitoring technologies and methods recognized by the [National Spectrum Management Association](#).

---

<sup>1</sup> The amendments to Title 22 as proposed contain an important protective provision that will ensure careful assessment of [biological effects](#) within the Santa Monica Mountains Local Implementation Zone. What is interesting is that the current ordinance incorporates the biological review process in 22.14.1820. Any CEQA-compliant environmental assessment must include the findings from the biological review process. This provision must be made a part of the Requirements and a finding of compliance by the Director or Hearings Officer after the application is filed.

- **Reasonable Accommodation under the Americans with Disabilities Act.** A permit issued under Title 16 or 22 does not excuse the permittee from any obligations it may have under ADA Title III. Wireless providers shall have an affirmative obligation to collaborate fully and in good faith with local authorities to extend reasonable accommodations.
- **Insurance**—Wireless providers shall have an affirmative obligation to carry liability coverage for personal injury and property damage resulting from RF/EMF radiation exposure. Los Angeles County must be named as an additional insured.
- **Bond**—Wireless providers shall post a bond commensurate with the RF/EMF risks to the community, designating Los Angeles County as beneficiary.
- **Indemnification**—Wireless providers shall ensure adequate contractual indemnification obligating Applicant to Los Angeles County.
- **Annual RF/EMF Report by Los Angeles Department of Health.** The Los Angeles Department of Health shall be responsible for preparing an Annual RF/EMF Health Report based on regular surveying of the health effects of exposing residential communities, schools, and other vulnerable populations to RF/EMF radiation emitted by wireless devices within the County.
- **Wireless Provider’s Duty of Care and Mitigation, and Presumption of Causation of Harm.** These amendments to Titles 16 and 22 recognize that the risk of harms from RF/EMF exposure is foreseeable, and for this reason those operating wireless facilities have an affirmative duty of care to monitor and to mitigate harms to those who are exposed. The failure to take reasonable precautions to monitor or to protect local populations, or to implement any of the relevant Standard Conditions under this Addendum and Appendices, shall create a presumption of causation of RF/EMF related injuries documented by those suffering from these harms.
- **Fire Prevention and Management.** Neither of the proposed amendments to Title 16 and Title 22 can under Ministerial Review eliminate the public’s right to notification and hearing concerning the risks of fire from RF/EMF emitting devices, flammable materials, and supporting equipment. The public shall have a right to notice and hearing regarding the adequacy of measures for fire prevention and management. The applicant must provide certification by a Registered Professional Engineer of proper facility design for purposes of electrical and fire safety. (See Appendix 5 for detailed proposal regarding Application Requirements and Conditions for Fire Prevention and Management for wireless facilities.)
- **Prior Ministerial Permits**—Titles 16 and 22 shall operate prospectively. However, the enactment of these amendments shall not ratify any ministerial permits granted before the effective date of the ordinances. Such permits shall be deemed null and void, and will require *de novo* application and approval.
- **Malibu Resolution—Model for Standard Conditions.** See Appendix 4.

## **Applicant’s Burden of Proving Certification/Documentation and Los Angeles County Required Findings**

- Applicant must demonstrate within the ten (10) day shot clock time limit that it is in full compliance with the above Application Requirements. Applicant must submit documentary proof supported by certification of veracity of its claims, under penalty of perjury.
- Failure to do so will render the Application incomplete and the shot clock tolled.

### **Waivers (Section K)**

Waivers cannot be granted arbitrarily or designed to circumvent or undermine federal or California state constitutional mandates or other laws.

- Discretionary waivers must be based on a finding by the Commissioner or Hearings Officer supported by substantial evidence that they are justified and not conclusionary. The responsible officer has the burden of justifying the decision in a written report which itself shall be subject to notice and hearing. Arbitrary waivers in violation of this provision are deemed null and void.

### **Note on Rights and Prerogatives of Local Communities under the 1996 Telecommunications Act, the Spectrum Act, the FCC's Shot Clock Regulations, and California Planning and Land Use Law**

- **Harmonizing Local Authority with the 1996 Telecommunications Act**
  - 47 USC §332(c)(7) expressly reserves long-standing state and local authority over decisions regarding the placement, construction, and modification of personal wireless services. The exceptions are that ((B)(i)(II)) local regulation “shall not prohibit or have the effect of prohibiting the provision of personal wireless services” and ((c)(7)(B)(i)(I)) local regulation “shall not unreasonably discriminate among providers of functionally equivalent services.”

#### **Comment:**

Nothing in the statute or FCC rules preempts state law requirements for notice, hearing, or consideration of issues like aesthetics, community values or general preferences. The “shot clock” rules do not overrule state statutory procedures, they merely impose a limit on the time it takes to accomplish them. State law requires notice and public hearing, and the county cannot ignore state law merely because of federally imposed (or even state law imposed) time constraints.

A local authority can still deny or condition permits based on aesthetic, local value or safety considerations justifying setbacks from residential properties or separation between wireless facilities. The authority may have to let a facility be in the vicinity, but it does not necessarily have to be the precise location the provider wants. Local authorities can impose a general prohibition in residential areas, for example, so long as there is a waiver process that allows the provider to prove that a denial of a facility in a residential neighborhood will constitute an effective prohibition of service.

- **Public Notice and Opportunity for Comment Under California State Law**

Under California law, Los Angeles County cannot arbitrarily strip away due process protections under the excuse of Ministerial Site Review. California Government Code TITLE 7. PLANNING AND LAND USE [65000 - 66499.58] clearly sets out procedures for notification, public hearings, content, co-location of wireless facilities, permits and variances. It has very limited exceptions for emergencies, and one specific exception for backup generators serving macro-towers. (See in particular: 65090, 65091, 65094, 65964, 65850.6, 65964.1, 65905, and 65850.75). **Only eligible facilities requests meeting the requirements of 47 C.F.R. §1.6100 and emergency standby generators subject to California Government Code Section 65850.75 can lawfully be processed on a ministerial, non-discretionary basis without notice or hearing.**

## **Conclusion**

Los Angeles County's hands are not tied. It has the legal authority and the power to require that the installation and operation of small cell and macro towers within the County be reasonable and safe. The question is: does it have the will?

We appreciate your serious review of this analysis and the main March 10, 2022 filing expressing the concerns of 5G Free California and the thousands of residents of Los Angeles County who are members. We stand ready to cooperate with the Planning Commission and Board of Supervisors in effectively addressing these concerns and points of law in a manner that will bring wise and reasonable balance to these matters that concern us all.

Sincerely,

Julian Gresser  
Of Counsel Swankin & Turner, Washington, DC  
Counsel to 5G Free California

## Appendix 1

### Problematic Provisions in Title 22 Amendments with Proposed Remedies; Defects in Title 16 Amendments

(Draft text of proposed amendments to Title 22 is in italics; new text is in **bold blue**; deleted text is ~~struck through in red~~)

#### 1. SAFETY STANDARDS

***Small cell facility.*** As defined in 47 C.F.R. Section 1.6002(l), or any successor provision, a “small wireless facility” is a personal wireless services facility that meets the following conditions:

*6. The facility does not result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in 47 C.F.R. Section 1.1307(b).*

**Problem:** This sentence implies that the current FCC thermal standard, which does not account for biological effects of RF/EMF, is the only relevant standard. Note must also be made that the major health agency in the federal government has not as yet adopted an official policy or regulations regarding RF/EMF exposure of human populations. Moreover, local governments have the legal authority and power to enact supplemental standards, subject to the conditions noted below.

**Remedy: Small cell facility.** As defined in 47 C.F.R. Section 1.6002(l), or any successor provision, a “small wireless facility” is a personal wireless services facility that meets the following conditions:

6. The facility does not result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in 47 C.F.R. Section 1.1307(b), **and other state and local standards and requirements designed to protect and secure the health, safety, and wellbeing of local communities.**

#### 2. CONDITIONAL USE PERMITS (CUP)—SECTION 6.B.

***SECTION 6.*** Section 22.22.040 is hereby amended to read as follows:

##### ***22.22.040 - Land Use Regulations for Zone M-3.***

***B. Conditional Use Permit.*** If a Conditional Use Permit (Chapter 22.158) application has first been approved, premises in Zone M-3 may be used for:

*1. Any use that is listed under Zone M-2 in Section 22.22.030 (Land Use Regulations for Zones M-1, M-1.5, M-2, and M-2.5) that requires a Conditional Use Permit application and is subject to the same limitations and conditions as in Zone M-2.*

**Problem:** This Section leaves ambiguous whether all existing CUPs will remain in full force and effect, subject to minor qualifications. The existing CUP framework must remain, or its removal or drastic modification justified under U.S. and California Constitutions and other laws. The proposed Ministerial framework must comply with these laws as well.

**Remedy: B. Conditional Use Permit.** **The existing Conditional Use Permit Framework shall remain unchanged as applied to all existing permits and applications that were submitted**

**before this ordinance takes effect.** If a Conditional Use Permit (Chapter 22.158) application has first been approved, premises in Zone M-3 may be used for:

1. Any use that is listed under Zone M-2 in Section 22.22.030 (Land Use Regulations for Zones M-1, M-1.5, M-2, and M-2.5) that requires a Conditional Use Permit application and is subject to the same limitations and conditions as in Zone M-2.

### **3. PROTECTING THE POPULATION FROM OVEREXPOSURE TO RF/EMF**

*SECTION 11. Section 22.26.040 is hereby amended to read as follows:*

*Section 22.26.040 – Specific Plan Zone.*

...

*B. Land Use Regulations.*

...

*3. Wireless Facilities. If a zone or land use category within a Specific Plan is silent with regard to wireless facilities, the Director may accept an application for a wireless facility if the Director determines that a wireless facility is similar to another use permitted within such zone or land use category, in accordance with the following:*

**Problem:** The proposed regulation as presented will allow the Director to compound the problem of misuse or over-reach of the Ministerial framework. The standard of “similar to” is ambiguous and invites arbitrary interpretation.

**Remedy:** 3. Wireless Facilities. If a zone or land use category within a Specific Plan is silent with regard to wireless facilities, the Director may accept an application for a wireless facility if the Director determines that a wireless facility **a) does not threaten the health and safety of any person living within 1,500 feet of the wireless facility by being exposed to RF/EMF radiation emissions from the proposed wireless facility; and b) is similar to another use permitted within such zone or land use category, in accordance with the following:**

### **4. ACHIEVING “EQUITY”**

#### **22.140.650 Wireless Facilities**

*A. Purpose. This purpose of this Section is to:*

*1. Facilitate wireless communications service providers to provide equitable, high quality wireless communications service infrastructure to serve the current and future needs of the County's residents, visitors, businesses, and local governments quickly, effectively, and efficiently.*

**Problems** The term “equitable” is undefined. Equity requires that an **effective balance** be achieved between the objectives of streamlining and protection of public health, safety, and welfare of County residents.

**Remedy:** 1. Facilitate wireless communications service providers to provide equitable, high quality wireless communications service infrastructure to serve the current and future needs of the County's residents, visitors, businesses, and local governments quickly, effectively, and efficiently. **For purposes of this subsection, “equitable” incorporates the concepts of diversity, equity, and inclusion. The Director shall make a finding of effective balance and equitable high equality service by establishing a record of due consideration of safer, faster, more cyber-secure, more energy efficient, climate change friendly alternatives, as set forth**

and encouraged in all applicable federal and state laws and regulations regarding wireless facilities.

## 5. PROTECTION FROM ILLEGAL INVERSE CONDEMNATION

### 22.140.650 Wireless Facilities

**B. Applicability**—This Chapter applies to all wireless facilities located on private property and public property, except for small cell facilities to be located in the public right of way which are subject to Chapter 16.25 (Small Cell Facilities) in Title 16 (Highways) of the County Code. Wireless facilities shall be permitted in all zones except Zones B-1 and B-2, subject to the required application as specified in Subsection C, below.

**Problem:** As applied, the amendments to Title 22 will codify ongoing illegal inverse condemnations of private property in favor of easement holders seeking to install and operate wireless facilities on private land.

**Remedy: B. Applicability**—This Chapter applies to all wireless facilities located on private property and public property, except for small cell facilities to be located in the public right of way which are subject to Chapter 16.25 (Small Cell Facilities) in Title 16 (Highways) of the County Code. Wireless facilities shall be permitted in all zones except Zones B-1 and B-2, subject to the required application as specified in Subsection C, below. **Nothing in this proposed Amendment to Title 22 shall be used or construed to permit, authorize, or require any intrusion on or change to any landowner's private property rights, including the terms of any easement, lease or other property interest. No permit or other authorization granted under Title 22 shall be construed to permit any trespass or nuisance.**

## 6. STRENGTHEN APPLICATION REQUIREMENTS

### 22.140.650 Wireless Facilities

#### D. Application Requirements.

1. Ministerial Site Plan Review. A Ministerial Site Plan Review (Chapter 22.186) application is required to authorize the following:

- a. Installation and operation of a small cell facility located on private property and public property that is not a public right of way;
- b. An Eligible Facilities Request, as defined in Section 22.14.230(W), for an existing facility, which does not include a small cell facility located in the public right of way which instead is subject to Chapter 16.25 (Small Cell Facilities) of the County Code, that was previously approved with a Ministerial Site Plan Review (Chapter 22.186);
- c. A macro facility on an existing support structure that meet all standards in Subsection E, below, and does not require a waiver;

#### Problems:

- It is unclear whether and how an Eligible Facilities Request (EFR) complies with and meets the Application Standards set forth in the main commentary filed on March 15.
- It is insufficient that a macro tower only meet the standards of Subsection E. It must satisfy all other requirements of federal, state, and local laws.

- The Ministerial Site Plan Review provisions do not ensure that the wireless facilities eligible for ministerial treatment will have sufficient documentation to allow a finding of consistency with other laws.

**Remedy:**

**D.1.f. Any application for which ministerial treatment is requested must submit the same information and documentation as is required for Conditional Use Permits.**

**D.1.g. The Director may conduct and process a Ministerial Site Plan Review unless the Director determines that the new wireless facility will not threaten the health or safety of any person exposed to the RF/EMF radiation emissions from the wireless facility. In particular but without limiting the foregoing, the Director must find that the wireless facility's RF/EMF emissions will not sicken any person, or exacerbate any present illnesses any person already suffers, as a result of the wireless facility's operation.**

## **7. ADDITIONAL DOCUMENTATION REQUIRED**

### ***22.140.650 Wireless Facilities***

#### ***D. Application Requirements.***

**Problem:**

The draft ordinance does not require enough documentation to prove entitlement, need or propriety for either Ministerial Site Plan Reviews or Conditional Use Permits. At minimum, Subsection D should be revised to require the following additional documents.

**Remedy:**

**D.4. For every new application, the applicant shall prepare and submit to the Director: a report on the radio frequency emissions levels of each wireless facility demonstrating that such emissions comply with adopted FCC guidelines.**

- 1. Generally. In addition to providing all required fees, all wireless telecommunication facility carriers or providers shall provide the information required by a separate application form published, and updated from time to time, by the County. If no such form is available, then the applicant must submit all documents, information, and any other materials necessary to allow the County to make required findings and ensure that the proposed facility will comply with applicable laws and not endanger the public health, safety, or welfare. Such information shall include at minimum:**

**a) Contact information for:**

- i. Applicant and their representatives**
- ii. Owner of proposed wireless communications facility**
- iii. If different from facility owner, the identity of the person or entity responsible for operating the proposed wireless facility**
- iv. The property owner or owner of the structure on which the proposed wireless facility would be installed**
- v. Names, addresses, telephone numbers, and email addresses of anyone acting on behalf of the applicant with regard to the application;**
- vi. The name, address and phone number of all persons that prepared or assisted in preparing the application and any required reports;**

- vii. The postal address, parcel number, or utility pole identifier of the property;
- viii. The location of the schools, playgrounds and parks within 1,500 feet of the project site;
- ix. Local contact person for emergencies
- x. Assessor's Parcel Number
- b) Purpose of new wireless communications facility or amendment
- c) Type of Application (Select all that apply)
  - i. Eligible Facilities Request
  - ii. Small Cell – Collocation
  - iii. Small Cell – New Structure
  - iv. Collocation (Non-Small Cell)
  - v. All Other Wireless Facilities
  - vi. Permit Renewal
  - vii. Waiver
- d) Letter of authorization signed by the landowner of the site in question authorizing the applicant to submit and process the application, including executed copies of any leases, letters of agency, or proof of ownership, of private property involved in the project.
- e) Authorizations, and Licenses
- f) Provide previous approvals, if applicable, and Certificate of Completion. Site inspection fees may apply if a final inspection was never requested
- g) Identify all other required permits and approvals for the subject facility.
- h) Electrical and Structural Safety Information. The following engineering documents prepared under the responsible charge of and sealed by a California licensed Professional Engineer must be included in the application:
  - i. A short circuit and coordination study (“SCCS”) calculated pursuant to the IEEE 551-2006: Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems or the latest version of that standard. The study must demonstrate the protection devices will ensure the equipment enclosure will not be breached. The SCCS must include analysis of Voltage Transient Surges due to contact of conductors of different voltages;
  - ii. A one-line diagram of the electrical system;
  - iii. Voltage Drop & Load Flow Study;
  - iv. Load Calculation;
  - v. Panel Directories;
  - vi. A plot plan showing the location of the mounting structure including address, or structure designation, or GPS location on the front sheet;
  - vii. A plot plan showing the location of the service disconnecting means; and
  - viii. An elevation drawing of the equipment and the service disconnecting means.

- i) **Structural Safety Information.** The structural/civil engineering documents prepared under the responsible charge of and sealed by a California licensed professional civil engineer.
- i. Photo simulations, from at least three different angles, showing the pole and streetscape before and after installation. In some cases, more than three different angles may be required;
  - ii. The azimuth, size and center-line height location of all proposed and existing antenna(s) on the supporting structure;
  - iii. The number, type and model of the antenna(s) that will be used with a copy of the specification sheet;
  - iv. The make, model, type and manufacturer of any tower involved and a design plan stating the tower's capacity to accommodate multiple users;
  - v. **Site and Construction Plans.** Complete and accurate plans, drawn to scale, signed, and sealed by a California-licensed engineer, land surveyor, and/or architect, which include the following items.
    - (1) A site plan and elevation drawings for the facility as existing and as proposed with all height and width measurements explicitly stated.
    - (2) A site plan describing the proposed tower and antenna(s) and all related fixtures, structures, appurtenances and apparatus, including height above pre-existing grade, materials, color and lighting;
    - (3) A depiction, with height and width measurements explicitly stated, of all existing and proposed transmission equipment.
    - (4) A depiction of all existing and proposed utility runs and points of contact.
    - (5) A depiction of the leased or licensed area of the site with all rights-of-way and easements for access and utilities labeled in plan view.
  - vi. Detailed map with locations of the poles or other property on which equipment is to be located, including specific pole identification number, if applicable, and the areas it will service;
  - vii. Description as to why the desired location is superior to other similar locations, from a community perspective, including, but not limited to:
    - (1) Proximity to residential buildings and descriptions of efforts to prevent any blocking of views of impressive scenes; and
    - (2) Written documentation demonstrating a good faith effort to locate the proposed facility in the least intrusive location in accordance with the location requirements of this Resolution.;
  - viii. A description in writing and a visual rendering demonstrating effective screening of all ground-mounted or roof-mounted equipment of the facility from view.
  - ix. Color-coded carrier-generated RF Coverage (propagation) maps, at a scale no smaller than 1 inch (1") to a quarter (1/4) mile with all appropriate legends, showing the coverage for the highest and lowest frequencies to be used by the facility. Frequencies are to be stated numerically, not qualitatively.
  - x. Provide a represented value in dB of each colors it specifically represents.

- xi. If the project involves, modifies or will use an existing facility or structure, a description of the type of structure (e.g., guyed, self-supporting lattice or monopole), and a report on the physical condition of the facility certified by a professional engineer licensed in the state of California.
- xii. If the application is for a new tower, clear and convincing technical evidence by a carrier or wireless service provider justifying the total height of the proposed facility and the need for such to the exclusion of all reasonable alternatives. Evidence in the form of propagation studies must include all modeling data and assumptions used to produce the studies at the requested height and should take into consideration the ability to collocate other carriers in the future.
- xiii. A siting analysis which identifies other feasible locations within or outside the county which could serve the area intended to be served by the facility, unless the applicant provides compelling technical reasons for providing fewer than the minimum.
- xiv. An affirmation, under penalty of perjury, that the proposed installation will be FCC compliant, in that it will not cause members of the general public to be exposed to RF levels that exceed the emissions levels deemed safe by the FCC. A copy of the fully completed FCC form "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance: Appendix A" titled "Optional Checklist for Determination of Whether a Facility is Categorically Excluded" for each frequency band of RF emissions to be transmitted from the proposed facility upon the approval of the application. All planned radio frequency emissions on all frequency bands must be shown on the Appendix A form(s) attached to the application. All planned radio frequency emissions are to be entered on each Appendix A form only in wattage units of "effective radiated power."
- xv. A statement detailing the frequency, modulation and class of service of radio or other transmitting equipment;
- xvi. A copy of the FCC license applicable for the intended use of the proposed facilities;
- xvii. A HazMat Business Plan for all new generators, and any storage and/or use of hazardous materials during the project, to include:
  - (1) A list of toxic substances that may develop during arcing or fire that may impede fire suppression efforts;
  - (2) A list of hazards that may develop during arcing or fire that may impede fire suppression efforts;
- xviii. A demolition plan, if applicable.
- xix. A written statement of the applicant's willingness to allow other carriers to co-locate on the proposed personal wireless service facility where technically and economically feasible and aesthetically desirable, subject to the qualification that colocation should not occur when public exposures from the resulting higher cumulative sources would exceed FCC limits.
- xx. Such other information as the Director shall establish.

- xxi. A statement signed by a person with legal authority to bind the applicant attesting under penalty of perjury to the accuracy of the information provided in the application. If attester not an authorized employee of the applicant, then the attester must demonstrate that it is an authorized agent of the applicant, with lawful Power of Attorney from the applicant.

## 8. SPECIAL PROTECTIONS FOR RESIDENCES AND SCHOOLS

### 22.140.650 Wireless Facilities

#### *E. Developmental Standards*

1. *General Standards.* All wireless facilities, except for facilities as part of Eligible Facilities Requests and small cell facilities, shall comply with the following standards.

*b. Location.*

i. *Wireless facilities shall not encroach into any required setbacks for structures.*

ii. *In Residential Zones, including in the public right of way, wireless facilities shall be placed no further than five feet from any common property line shared with adjoining lots, and shall be stealth or use concealment techniques.*

...

#### *F. Development Standards for Small Cell Facilities.*

*1. Setbacks.*

a. *Small cell facilities shall not encroach into any required setbacks for structures.*

b. *In Residential Zones, excluding the public right of way, small cell facilities shall be placed no further than five feet from any common property line shared with adjoining lots.*

**Problem:** The draft ordinance allows wireless facilities to be too close to residences and schools.

**Remedy:**

E.b.ii. In Residential Zones, including in the public right of way, wireless facilities shall be placed no further than five feet from any common property line shared with adjoining lots, and shall be stealth or use concealment techniques. **No wireless facility may be sited in a location that is less than 1,500 feet of any residence or public or private school.**

F.1.b. In Residential Zones, excluding the public right of way, small cell facilities shall be placed no further than five feet from any common property line shared with adjoining lots. **No wireless facility may be sited in a location that is less than 1,500 feet of any residence or public or private school.**

## 9. HISTORIC SITES AND SPECIALLY PROTECTED AREAS

### 22.140.650 Wireless Facilities

#### *E. Developmental Standards*

1. *General Standards.* All wireless facilities, except for facilities as part of Eligible Facilities Requests and small cell facilities, shall comply with the following standards.

*b: Location*

*iii. Wireless facilities shall be located in compliance with the limitations in Chapter 22.102 (Significant Ecological Areas) and Chapter 22.336 (Santa Monica Mountains North Area Community Standards District). All wireless facilities to be located within the Santa Monica Mountains Coastal Zone shall be in compliance with all requirements in Chapter 22.44 (Santa Monica Mountains Local Implementation Program), and if applicable, Chapter 22.56 (Coastal Development Permits).*

**Problems:**

- It is unclear procedurally how these provisions are enforced.
- The Director must be required to require a Historic or Fragile Environment/Mitigation Assessment; exceptions to this requirement may be permitted only under the most limited circumstances and conditions, and the Director must support any finding of Negative Declaration only by substantial evidence.
- The Ordinance must state which it does not that all permits covering land under the jurisdiction of the Coastal Commission or within specially protected areas are subject to all additional approvals of Coastal Commission and notice and hearing requirements of these sections of the Land Use and Zoning Plan.

**Remedy:**

E.1.b.iii Wireless facilities shall be located in compliance with the limitations in Chapter 22.102 (Significant Ecological Areas) and Chapter 22.336 (Santa Monica Mountains North Area Community Standards District). All wireless facilities to be located within the Santa Monica Mountains Coastal Zone shall be in compliance with all requirements in Chapter 22.44 (Santa Monica Mountains Local Implementation Program), and if applicable, Chapter 22.56 (Coastal Development Permits). **Nothing in this Ordinance can be construed to remove or alter additional requirements for wireless applicants under the Coastal Zone and Specially Vulnerable Areas such as the Santa Monica Mountains, which themselves may require notice and public hearings.**

**10. MONOPOLES PRESENT FIRE AND CONCEALMENT DANGERS**

**22.140.650 Wireless Facilities**

*H. Standards for Wireless Facilities Subject to Conditional Use Permit. All facilities that are subject to a Conditional Use Permit (Chapter 22.158) pursuant to Subsection C.2, above, shall comply with the following standards:*

*2. Design standards. Wireless facilities shall incorporate the following concealment measures appropriate for the proposed location:*

*a. Monopoles. Monopoles shall be designed as follows:*

**Problem:** Monopoles and other faux structures present special environmental hazards including toxic waste and fire.<sup>2</sup> The proposed Ordinance appears to encourage the use of monopoles without any understanding of their special environmental risks.

**Remedy:**

H.2.a. Monopoles. **Monopoles present special fire risks and toxic waste hazards, especially in areas subject to the Santa Ana winds. All Environmental Impact Statements, Environmental Assessments, and Negative Declarations under CEQA must address and mitigate the special hazards of monopoles, and prohibit their use if scientifically based mitigation measures cannot be presented by the applicant, and enforced by the applicant and the County. If monopoles can be proven to be safe from fire and toxic waste hazards, Monopoles shall be designed as follows: (text continues)**

**11. ALL WIRELESS FACILITIES MUST BE TESTED ANNUALLY FOR FULL STRENGTH RADIATION EMISSIONS**

**22.140.650 Wireless Facilities**

*J. Conditions of Approval.*

*1. Every five years, the permittee shall prepare and submit to the Director a report on the radio frequency emissions levels of each wireless facility demonstrating that such emissions comply with adopted FCC limitations for general population/uncontrolled exposure to such emissions when operating at full strength.*

**Problem:** Planning Staff has recommended deleting this clause. This presents a clear and present danger to the general public, who have a right to know the levels of exposure from RF/EMF radiation in the vicinity of where they live and work.

**Remedy:** Do not delete this clause. Provide a protocol for taking and recording full strength emissions on an annual basis and make available to the public.

J.1. ~~Every five years, t~~**The permittee shall prepare and submit to the Director an annual report on the radio frequency emissions levels of each wireless facility demonstrating that such emissions comply with adopted FCC limitations for general population/uncontrolled exposure to such emissions when operating at full strength at distances relevant to where the general public is chronically exposed. Director shall make such reporting easily available to the general public.**

**12. WAIVERS.**

*K. Waivers.*

*1. For wireless facilities subject to Subsection C.2, above, the Commission or Hearing Officer may grant a waiver to one or more of the development standards in this Section if the Commission or Hearing Officer determines that the applicant has established that the denial of an application would:*

---

<sup>2</sup> See, e.g. [Influence of microwave frequency electromagnetic radiation on terpene emission and content in aromatic plants](#), and [Microplastics in Freshwater Systems](#).

*a. Prohibit or effectively prohibit the provision of personal wireless services pursuant to 47 U.S.C. § 332(c)(7)(B)(i)(II);*

*b. Otherwise violate applicable laws or regulations; or*

**Problem:** The provision is vague and overbroad and invites abuse. Waivers cannot be granted arbitrarily or designed to circumvent or undermine federal or California state constitutional mandates or other laws.

**Remedy:** Discretionary waivers must be based on a finding by the Commissioner or Hearings Officer supported by substantial evidence that they are justified and not conclusionary. The responsible officer has the burden of justifying the decision in a written report which itself shall be subject to notice and hearing. Arbitrary waivers in violation of this provision are deemed null and void.

### **13. ALL PROBLEMS AND REMEDIES LISTED ABOVE MUST ALSO APPLY AS RELEVANT TO SMALL CELL FACILITIES AS NOTED IN TITLE 16 (HIGHWAYS) OF THE COUNTY CODE.**

**Problem:**

- The proposed amendments of Title 16 are highly problematic in the following ways, among others:
  - The term “highway” is deceptive. First, “highway” is not defined. Second, the amendments are really about Small Cell Facilities located on all public rights of way, not only the conventional and public’s general understanding of the term, meaning a true “highway.”
  - Presumably, a “highway” will include a local authority or public utility easement otherwise encroaching on private property. If this interpretation is incorrect, the impression must immediately be corrected. If the definition of a “highway” is intended to include a public easement on private property, Title 16 could be construed to support, justify, and codify under its Section G Definitions illegal overreach by the “Owner”, a telecom provider that is “authorized to control and maintain the SCF”; in other words, an unconstitutional taking and inverse condemnation as already pointed out in this Addendum.
  - There is no mention at all of fire hazards, prevention, and management which are addressed in greater detail in Appendices 4 and 5. Together these two Appendices offer the safest most effective model, principles, and procedures, incorporating due process precepts, which Los Angeles County can immediately adopt.
- Many of the identified problems and proposed remedies apply equally to Small Cell Facilities permitted under Title 16 of the County Code.

**Remedy:** All proposed remedies applicable to Title 22 as set forth in Appendix 2, where relevant, must apply equally be included in Title 16 of the County Code.

## Appendix 2

### Problematic Provisions in Title 16 Amendments with Proposed Remedies

(draft text of proposed amendments to Title 16 is in italics; new text is in **bold blue**; deleted text is ~~struck through in red~~)

## 1. SPECIAL PROTECTIONS FOR RESIDENCES AND SCHOOLS

### *16.25.050 Development Standards for SCFs.*

#### *B. Location*

**Problem:** The draft ordinance allows wireless facilities to be too close to residences and schools.

**Remedy:**

**B.3. No SCF may be sited in a location that is less than 1,500 feet of any residence or public or private school.**

## 2. ADDITIONAL INFORMATION REQUIRED

### *16.25.030 Permit Required*

#### *B. Application*

*2. Design guidelines and permit checklist. The road commissioner may develop and issue design guidelines for SCFs, permit conditions for SCFs and EFRs, and permit checklists for SCFs and EFRs implementing the provisions of this chapter. The permit application and checklists for SCFs and EFRs shall demonstrate compliance with this chapter for the application to be deemed complete.*

**Problem:** The draft ordinance does not ensure that SCF applications will have sufficient documentation to allow a finding of consistency with other laws. Subsection B.2 should be revised to state:

**Remedy:**

**B.2.A. The applicant must submit all documents, information, and any other materials necessary to allow the County to make required findings and ensure that the proposed facility will comply with applicable laws and not endanger the public health, safety, or welfare. Such information shall include at minimum:**

- 1. Contact information for:**
  - a. Applicant and their representatives**
  - b. Owner of proposed wireless facility**
  - c. If different from facility owner, the identity of the person or entity responsible for operating the proposed wireless facility**
  - d. The property owner or owner of the structure on which the proposed wireless facility would be installed**
  - e. Names, addresses, telephone numbers, and email addresses of anyone acting on behalf of the applicant with regard to the application;**

- f. The name, address and phone number of all persons that prepared or assisted in preparing the application and any required reports;
  - g. The postal address, parcel number, or utility pole identifier of the property;
  - h. The location of the schools, playgrounds and parks within 1,500 feet of the project site;
  - i. Local contact person for emergencies
  - j. Assessor's Parcel Number
2. Purpose of new wireless facility or amendment
  3. Type of Application (Select all that apply)
    - a. Eligible Facilities Request
    - b. Small Cell – Collocation
    - c. Small Cell – New Structure
    - d. Collocation (Non-Small Cell)
    - e. Permit Renewal
    - f. Waiver
  4. Authorizations, and Licenses
  5. Provide previous approvals, if applicable, and Certificate of Completion. Site inspection fees may apply if a final inspection was never requested.
  6. Identify all other required permits and approvals for the subject facility.
  7. Electrical and Structural Safety Information. The following engineering documents prepared under the responsible charge of and sealed by a California licensed Professional Engineer must be included in the application:
    - a. A short circuit and coordination study ("SCCS") calculated pursuant to the IEEE 551-2006: Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems or the latest version of that standard. The study must demonstrate the protection devices will ensure the equipment enclosure will not be breached. The SCCS must include analysis of Voltage Transient Surges due to contact of conductors of different voltages;
    - b. A one-line diagram of the electrical system;
    - c. Voltage Drop & Load Flow Study;
    - d. Load Calculation;
    - e. Panel Directories;
    - f. A plot plan showing the location of the mounting structure including address, or structure designation, or GPS location on the front sheet;

- g. A plot plan showing the location of the service disconnecting means; and
  - h. An elevation drawing of the equipment and the service disconnecting means.
8. **Structural Safety Information.** The structural/civil engineering documents prepared under the responsible charge of and sealed by a California licensed professional civil engineer.
- a. Photo simulations, from at least three different angles, showing the pole and streetscape before and after installation. In some cases, more than three different angles may be required;
  - b. The azimuth, size and center-line height location of all proposed and existing antenna(s) on the supporting structure;
  - c. The number, type and model of the antenna(s) that will be used with a copy of the specification sheet;
  - d. The make, model, type and manufacturer of any support structure involved and a design plan stating the structure's capacity to accommodate multiple users;
  - e. **Site and Construction Plans.** Complete and accurate plans, drawn to scale, signed, and sealed by a California-licensed engineer, land surveyor, and/or architect, which include the following items.
    - (1) A site plan and elevation drawings for the facility as existing and as proposed with all height and width measurements explicitly stated.
    - (2) A site plan describing the proposed structure and antenna(s) and all related fixtures, structures, appurtenances and apparatus, including height above pre-existing grade, materials, color and lighting;
    - (3) A depiction, with height and width measurements explicitly stated, of all existing and proposed transmission equipment.
    - (4) A depiction of all existing and proposed utility runs and points of contact.
    - (5) A depiction of the leased or licensed area of the site with all rights-of-way and easements for access and utilities labeled in plan view.
  - f. Detailed map with locations of the poles or other property on which equipment is to be located, including specific pole identification number, if applicable, and the areas it will service;
  - g. Description as to why the desired location is superior to other similar locations, from a community perspective, including, but not limited to:
    - (1) Proximity to residential buildings and descriptions of efforts to prevent any blocking of views of impressive scenes; and
    - (2) Written documentation demonstrating a good faith effort to

locate the proposed facility in the least intrusive location in accordance with the location requirements of this Resolution.

- h. Color-coded carrier-generated RF Coverage (propagation) maps, at a scale no smaller than 1 inch (1") to a quarter (1/4) mile with all appropriate legends, showing the coverage for the highest and lowest frequencies to be used by the facility. Frequencies are to be stated numerically, not qualitatively. Provide a represented value in dB of each color it specifically represents.
  - (1) If the project involves, modifies or will use an existing facility or structure, a description of the type of structure and a report on the physical condition of the facility certified by a professional engineer licensed in the state of California.
- i. If the application is for a new structure, clear and convincing technical evidence by a carrier or wireless service provider justifying the total height of the proposed facility and the need for such to the exclusion of all reasonable alternatives. Evidence in the form of propagation studies must include all modeling data and assumptions used to produce the studies at the requested height and should take into consideration the ability to collocate other carriers in the future.
- j. A siting analysis which identifies other feasible locations within or outside the County which could serve the area intended to be served by the facility, unless the applicant provides compelling technical reasons for providing fewer than the minimum.
- k. An affirmation, under penalty of perjury, that the proposed installation will be FCC compliant, in that it will not cause members of the general public to be exposed to RF levels that exceed the emissions levels deemed safe by the FCC. A copy of the fully completed FCC form "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance: Appendix A" titled "Optional Checklist for Determination of Whether a Facility is Categorically Excluded" for each frequency band of RF emissions to be transmitted from the proposed facility upon the approval of the application. All planned radio frequency emissions on all frequency bands must be shown on the Appendix A form(s) attached to the application. All planned radio frequency emissions are to be entered on each Appendix A form only in wattage units of "effective radiated power."
- l. A statement detailing the frequency, modulation and class of service of radio or other transmitting equipment;
- m. A copy of the FCC license applicable for the intended use of the proposed facilities;
- n. A HazMat Business Plan for all use of hazardous materials during the project, to include:

- (1) A list of toxic substances that may develop during arcing or fire that may impede fire suppression efforts;
  - (2) A list of hazards that may develop during arcing or fire that may impede fire suppression efforts;
- o. A demolition plan, if applicable.
- p. A written statement of the applicant's willingness to allow other carriers to co-locate on the proposed personal wireless service facility where technically and economically feasible and aesthetically desirable, subject to the qualification that colocation should not occur when public exposures from the resulting higher cumulative sources would exceed FCC limits.
- q. Such other information as the Director shall establish.
- r. A statement signed by a person with legal authority to bind the applicant attesting under penalty of perjury to the accuracy of the information provided in the application. If attester not an authorized employee of the applicant, then the attester must demonstrate that it is an authorized agent of the applicant, with lawful Power of Attorney from the applicant.

**Problem 3:** The draft ordinance does not ensure structural and electrical safety. Subsection B.2 should also impose specific design criteria.

**Remedy:**

**B.2.B. Engineering and Design Standards for Pole-Mounted Facilities** In addition to the generally applicable standards set forth above, the design standards for SCFs are as follows:

- 1. **Facilities on Streetlight Poles.**
  - a. **Stealth.** The facility shall be engineered, designed, painted, coated, and otherwise made to maintain the look of a streetlight pole rather than a wireless facility, tower, or base station.
  - b. **Antennas and RRUs.** Antennas shall be top-mounted in a shroud, and RRUs and other equipment shall be placed underground. If RRUs and equipment cannot be underground, then they shall be placed within the shroud with the antenna. RRUs attached to the side of the pole or ground-mounted are discouraged, but if they are required due to technical reasons, they should use the smallest RRU volume possible and be stacked vertically and close together with minimal distance from the pole.
  - c. **Dimensions.** Antennas shall be of the smallest possible size, but in no case more than three cubic feet in volume. Pole-top wireless facilities, including shroud, shall be no more than 60 inches in height and 14.5 inches in diameter.
  - d. **Cables and Wiring.** All cables and wiring must be within the pole.
- 2. **Facilities on Wood Utility Poles.**
  - a. **Stealth.** The facility shall be engineered, designed, painted, coated, and

otherwise made to maintain the look of a utility pole rather than a wireless facility, tower, or base station.

- b. **Antennas.** The preferred mounting type for wireless facilities on wood utility poles is side-mounting.
- c. **Side-mounted Facilities.** Antennas and RRUs shall be mid-pole mounted (i.e., mid-pole mounted) in a shroud. If RRUs are attached to the side of the pole, the facility should use the smallest RRU volume possible, and the RRUs should be stacked vertically and close together with minimal distance from the pole.
  - (1) Antennas shall be of the smallest possible size, but in no case more than three cubic feet in volume.
  - (2) Side-mounted wireless facilities shall be of the smallest size technically feasible and shall not project from the pole more than 30 inches. The diameter of the shroud shall be no greater than the diameter of the pole or 14.5 inches, whichever is less. Side-mounted facilities shall only extend out on one side of the pole.
- d. **Top-mounted Facilities.** Antennas and RRUs shall be top-mounted in a shroud.
  - (1) **Dimensions.** Antennas shall be of the smallest possible size, but in no case more than three cubic feet in volume.
    - Pole-top wireless facilities, including shroud, shall be no more than 72 inches in height and 14.5 inches in diameter.
- 3. **Cables and Wiring.** All cables and wiring must be within the conduit on the exterior of the pole. The conduit must be a color that matches the pole and of the smallest size technically feasible.
- 4. **Replacement Poles.** If an applicant proposes or is required to install a replacement pole to accommodate the proposed facility:
- 5. **Placement.** A replacement pole must be in the same location as the pole that it is replacing or as close to the original location as possible, taking into account pole owner safety-related requirements and all applicable location and placement standards herein.
- 6. **Design.** Replacement poles should match the design (e.g., color, dimensions, height, style, and materials) of the existing pole that is being replaced.
- 7. **Cables and Wiring.** All cables and wiring on non-wood poles must be within the structure. All cables and wiring on wood poles must be within conduit on the exterior of the pole. The conduit must be a color that matches the pole and of the smallest size technically feasible.
- 8. **Stealth.** The facility should be stealth, as defined above in Section 3(E) and 4(A).

#### C. New (Non-Replacement) Poles.

1. **Waiver Required.** New poles are prohibited, unless a waiver is approved by the City to prevent a prohibition of service.
  2. **Design.** New poles (including antenna) shall have a maximum height of 28 feet and a maximum diameter of 14 inches, and any base enclosure shall not exceed 24 inches in width or height. If existing poles are present in the surrounding area, then the new pole shall be designed to resemble the existing poles in appearance, color, materials, and distribution pattern/spacing.
  3. New wooden poles are prohibited, unless required to match existing poles in the area surrounding the proposed installation site.
  4. **Cables and Wiring.** All cables and wiring on non-wood poles must be within the pole. All cables and wiring on wood poles must be within the conduit on the exterior of the pole. The conduit must be a color that matches the pole and of the smallest size technically feasible.
  5. **Antennas and RRUs.** Antennas and RRUs shall be contained within the pole and its base or underground.
  6. **Stealth.** The facility must be stealth, as defined above in Section 3(E) and 4(A).
  7. **Freestanding Facilities.** Freestanding facilities requiring a new support structure shall be stealth facilities. Further, they shall be located as close as possible to existing above-ground utilities, such as electrical towers or utility poles (which are not scheduled for removal or under grounding for at least 18 months after the date of application), light poles, trees of comparable heights, and in areas where they will not detract from the appearance of the City.
  8. Aside from the antenna itself, no additional equipment may be visible. All cables, including, but not limited to, electrical and utility cables, shall be run within the interior of the freestanding facility and shall be camouflaged or hidden to the fullest extent feasible without jeopardizing the physical integrity of the facility.
- D.** All wireless facilities shall be designed to prevent unauthorized climbing and graffiti.
- E.** **Fire Safety Standards.** All wireless facilities designs shall include:
1. a power shut off, such as by means of rapid entry Knox or similar type systems shall be installed;
  2. surge protection devices capable of mitigating a direct or partial direct lightning discharge; and
  3. surge protection devices capable of mitigating significant electrical disturbances that may enter the facility via conductive cables.
- F.** Satellite dish or parabolic antennas shall be situated as close to the ground as possible to reduce visual impact without compromising their function.
- G.** Support equipment pads, cabinets, shelters and buildings require architectural, landscape, color, fencing, or other camouflage treatment to minimize visual impacts

to the extent deemed necessary by the Approving Authority. Landscaping screening should also be provided if irrigation water is available.

- H. No freestanding facility or ancillary support equipment may be located between the face of a building and a public street, bikeway, park or residence.

**Appendix 3 — Julian Gresser, Counsel to 5G Free California**  
**Comments at Topanga City Council Town Meeting — Evening March 9, 2022**

- Thank you for the opportunity to offer these brief Comments on the proposed Ordinance, amending Title 22 of Los Angeles Planning and Zoning Code.
- First, I concur with President Carriel Carrier that the scheduling of the proposed public hearing on March 23 of the Planning Commission, whose recommendations the Board of Supervisors (BOS) will give heavy weight, is way too hasty. In fact, impulsive action and a failure to set a proper legal, scientific, and environmental foundation for consideration of Title 22 are the hallmark of this ill-conceived Ordinance.
- In a nutshell, the Ordinance will effectively codify the present illegal practice of bypassing over 30 years of a well-established and balanced Conditional Use Permit Registration system with an accelerated Ministerial Site Review of small cell and macro cell antennas installed on private property. This *de facto* practice is currently being challenged in the Los Angeles Superior Court in the case of [\*Angela Sherick-Bright v. County of Los Angeles\*](#). The ostensible justification for this precipitous rush to Ordinance is the FCC's shot clock deadlines that aim to accelerate densification of small cell and macro towers antennas emitting Radio Frequency/Electromagnetic Field (RF/EMF) radiation in high and dangerous concentrations within residential communities. The clear intention of the proposed Ministerial Site Review Application process, which will effectively replace Conditional Use Permits on new facilities, is to eliminate due process protections for the Los Angeles County community — namely, timely prior notification and an opportunity to be heard in public hearings, which are guaranteed by the First and Fifth Amendments of the U.S. Constitution and Article I, Section 7 of the California Constitution.
- Let us all agree that many local authorities recognize that protecting the public's constitutional rights to due process, and the health and wellbeing of communities are an important responsibility and priority. However, many local city councils and Boards of Supervisors are laboring under the false impression that “their hands are tied,” because they are being told and believe that the Telecommunications Act of 1996 preempts them from taking local protective action. This appears to be an unstated premise behind the proposed [amendment to Title 22](#). However, there are many important exceptions and qualifications to this overbroad blanket premise. You are being misled if you are told otherwise.
- I will summarize by the following questions the blatant legal deficiencies in the proposed Ordinance which also point to effective remedies. Most if not all the defects can be cured, if sufficient time is made available to consider them, soberly:
- **Question # 1:** By what legal authority and on what constitutional grounds can the BOS bypass and strip away due process protections of prior notification and public hearings?
  - **Response:** Nowhere in the Telecommunications Act of 1996 is there authority to bypass and to violate the U.S. Constitution or the California Constitution guarantees of due process. To apply the doctrine of preemption as the Board of Supervisors is considering would be to establish the FCC as a supra-constitutional agency. It is not. The shot clock is an excuse. The Los Angeles Planning Authority simply doesn't want to bother to take the time to ensure an opportunity for the public to participate in a meaningful way. The

fundamental First Amendment right of the public to be heard was reaffirmed in footnote #6 of the recently decided case of *Children's Health Defense v. FCC*.<sup>3</sup>

- **Question # 2:** Where does it say in the 1996 Telecommunications Act that local communities can allow telecom purveyors to convert easements to property rights without just compensation to private property owners?
  - **Response:** The Telecommunications Act of 1996 contains no such provision. As vigorously argued in *Angela Sherick-Bright v. County of Los Angeles*, the practice is an unconstitutional taking, an inverse condemnation, in violation of the Fifth and Fourteenth Amendments.
- **Question # 3:** Has there been any determination, affirmative or negative, relating to the necessity of assessing the environmental impacts of this project through an EIS interagency consultative process under the California Environmental Quality Act (CEQA)? Has the BOS complied with its obligations under the federal National Environmental Policy Act (NEPA), including coordinating with other concerned federal agencies, recognizing that there is substantial federal involvement in Los Angeles County? (so-called NEPA “federal handle.”)
  - **Response:** We can find no evidence of any official finding or determination pursuant to a formal due process compliant process to reach a decision on this question. Certainly, the BOS and the Planning Department have not prepared a Comprehensive Programmatic Environmental Impact Statement (EIS) as these statutes require for a series of actions that will transform Los Angeles County, as the proposed Ordinance will allow. There has been no formal finding of consistency with the environmental and health protections in the Regional, Coastal, Santa Monica Mountains, and other existing plans.
  - **Fire Hazards:** Given its record of fire catastrophes, Los Angeles County is justifiably concerned with fire prevention and management. This area is well within the County’s authority, jurisdiction, and control. For example, what special protections does the Ordinance provide for fires resulting from combustion of terpenes in conifers? Scientific studies<sup>4</sup> document that continuous RF/EMF radiation exposure is closely tied with increased terpene production in conifers. Terpenes are a combustible organic compound. The Ordinance utterly ignores this risk which would need to be addressed in any CEQA/NEPA compliant EIS. There is no question that Los Angeles County has an absolute right to take reasonable protections for fire protection and management, which

---

<sup>3</sup> The Commission maintains that because local regulation of where these antennas are installed is preempted, there is no point in providing the local authorities or their citizens with notice of pending installations. But it does not follow that because citizens do not have a vote or a veto over the placement of an antenna on a neighbor’s property, they are not entitled to know of the prospect. The First Amendment to the Constitution preserves the right of the people to petition the government for redress of grievances. See *Sorrell v. IMS Health Inc.*, 564 U.S. 552, 577 (2011) (“The First Amendment directs us to be especially skeptical of regulations that seek to keep people in the dark for what the government perceives to be their own good.”(citation omitted)); *Am. Bus Ass’n v. Rogoff*, 649 F.3d 734, 738 (D.C.Cir. 2011) (“The right ‘extends to [petitioning] all departments of the Government,’ including administrative agencies and courts.”(alteration in original) (quoting *Cal. Motor Transp. Co. v. Trucking Unlimited*, 404 U.S. 508, 510 (1972)); *Liberty Lobby, Inc. v. Pearson*, 390 F.2d 489, 491 (D.C. Cir. 1967) (Burger, J.) (“[E]very person or group engaged . . . in trying to persuade Congressional action is exercising the First Amendment right of petition.”); 2 Joseph Story, *Commentaries on the Constitution* § 1894, at 619 (Thomas M. Cooley ed., 4th ed. 1873) (1833) (emphasizing the centrality of petitioning for redress of grievances in republican government).

<sup>4</sup> E.g. see “[Influence of microwave frequency electromagnetic radiation on terpene emission and content in aromatic plants](#)”

are certainly not preempted by the 1996 Telecommunications Act, and addressed in the present Los Angeles Fire Ordinance. Again, from the perspective of the First and Fifth Amendments noted above, is the Board of Supervisors seriously proposing to deny the public its right of timely notification and hearing before approving a program that will impose pervasive and intensifying fire risks?

- The contention that small cell and macro tower densification is essential for emergency response is bogus. As is well documented by the [Resolution of the International Association of Fire Fighters](#), there are far safer well-established alternatives to addressing major fire hazards than by amplifying them.
- **Question # 4:** What special dangers does the proposed amendments to Title 22 pose to public schools in Los Angeles County? How will the BOS reconcile and balance its statutory obligation to deliver safe learning environments for children and teachers in Los Angeles County? What special risks will RF/EMF radiation released from densifying small cell and macro towers around schools present to children, teachers, and staff?
  - **Response:** The scientific record is clear that children are especially vulnerable. The accelerated deployment of macro towers on school properties is today causing direct conflicts with school administrator's fiduciary responsibilities to deliver healthy and safe learning environments for children. (See: [www.techsafeschools.org](http://www.techsafeschools.org); [Environmental Health Trust - Children](#); [Tech Safe Schools Legal Advisory](#))
- **Question # 5:** What special dangers do the proposed amendments pose for airports in Los Angeles County? How can the BOS reconcile the serious conflicts with current FAA regulations?
  - **Response:** See: Complaint in *Angela Sherick-Bright v. County of Los Angeles*.
- **Question # 6:** The proposed amendment stipulates that it must comply with existing federal laws, which include: the Historic Preservation Act, the Endangered Species Act, the Americans with Disabilities Act, the Fair Housing Amendments Act, to name a few. None of these federal statutes are preempted by the 1996 Telecommunications Act. They are entitled to co-equal dignity and consideration. The BOS cannot override these federal statutes by some ministerial gimmick, simply because it doesn't want to take the time to devise a reasonable and balanced solution.
  - **Response:** The nationally protected, historic area of View Park is the focus in *Angela Sherick-Bright v. County of Los Angeles*. How many other protected areas exist in Los Angeles County? How many already disabled persons will be further impaired, and their fragile conditions jeopardized? What endangered species will be threatened? What will be the impact on economically challenged and minority communities within Los Angeles County? Federal laws prohibit the ministerial mayhem contemplated by this illegal Ordinance. These concerns cannot be brushed aside by a provision buried in the Ordinance conceding, abstractly, that all federal, state, and local laws will be observed.
- **Question # 7:** What provision has been made for insurance for RF/EMF related harms? What consideration has been given to a bonding requirement, recognizing the hazards of RF/EMF radiation? What process is contemplated to coordinate with the Board of Health to report, investigate, and arrange for compensation of the thousands of victims of RF/EMF radiation exposure over the coming years? What provision is being made to deploy best available

community wide radiation monitoring devices and methodologies, recognized by the National Spectrum Management Association, so that the Los Angeles County Health Department will even know the levels of RF/EMF radiation to which County communities are being exposed?

- **Response:** None. No monitoring, no investigation, no compensation, no interest. It is called the “Public Pays Principle,” which the wireless providers are advocating must replace the well-established 1972 international OECD “Polluter Pays Principle.” For a note on the power of “mixed systems” of compensation and prevention, see [www.bbilan.org](http://www.bbilan.org))
- **Question # 8:** What potential liabilities will the BOS and Los Angeles County incur if Title 22 is passed without adequate consideration of the risks?
  - **Response:** The harms of proliferating and densifying small cell and macro towers in Los Angeles County are clear, foreseeable, measurable, and preventable. They are also uninsurable, because no reputable insurance company anywhere in the world will cover the risks of RF/EMF radiation harms. They are simply too great.
  - Under these conditions, at the very least the BOS has a fiduciary obligation to the community to address these risks, by inserting provisions in the Ordinance that require adequate insurance and indemnification and the posting of a substantial bond, which is a customary condition of other ultrahazardous activities.
- **Question # 9:** Why does the BOS not take the time to study carefully existing best ordinance practices, such as being implemented in Scarsdale, Malibu, Encinitas, and other local communities?
  - **Response:** Far preferable balanced alternatives consistent with the 1996 Telecommunications Act exist. The Planning Department and the BOS should study these templates and consider adopting them.
  - The Planning Department and BOS are advised to take a bold and innovative additional step: that is seriously to consider providing incentives for a far superior broadband option: optical fiber to the premises (OFTP). Optical fiber broadband will accomplish the infrastructural goals of the proposed Ordinance, including bridging the Digital Divide, while optimizing the beneficial uses of wireless and minimizing its hazards. OFTP is faster, safer, private<sup>5</sup>, more cybersecure, lower latency, energy efficient, and climate change friendly. OFTP must be a serious option for consideration in the BOS’ forthcoming NEPA/CEQA EIS. (See: Timothy Schoechle, [\*Reinventing Wires: The Future of Landlines and Networks\*](#))

**Conclusion:** Let us recognize that the present law and regulations pertaining to RF/EMF are in a state of flux. The FCC is claiming before the DC Circuit that the FDA, the principal health agency in the country, has adopted an Administrative Procedure Act (APA) compliant policy and

---

<sup>5</sup> Accelerating densification of small cell and macro towers raises serious unexamined questions regarding the encroachment on privacy protected under the CA Consumer Privacy Act. Many of these problems may be avoided under an OFTP framework. See webinar: [Citizen Rights and Remedies Under the Shadow of 5G Surveillance and Behavioral Modification](#).

regulations regarding RF/EMF safety and performance standards. But our legal team can find no evidence for these claims. Meanwhile, local communities like Los Angeles County are relying on these false claims and are placing their helpless populations under an Imminent Hazard. (See: [The Landmark FDA Case.](#))

The last thing one should do in chaos is to plunge more deeply. The precipitate haste by which Title 22 is being promoted provides a telltale clue to its overall character. President Carrier is wise in asking the BOS to pause and postpone; to think things through clearly and responsibly, especially given the long-term consequences; where necessary to consult with independent, uncompromised experts; to engage the public; and to prevent and correct an imminent folly. Los Angeles County and its Board of Supervisors will never regret taking the time at this critical juncture to discover the path of reasonable balance.

Thank you,

Julian Gresser, Counsel 5G Free California

## Appendix 4 — Malibu Resolution Section 8: A Model for Standard Conditions

### MALIBU RESOLUTION NO. 21-17

A RESOLUTION OF THE CITY OF MALIBU ADOPTING ENGINEERING, DESIGN AND LOCATION STANDARDS, CONDITIONS OF APPROVAL AND BASIC APPLICATION REQUIREMENTS FOR WIRELESS COMMUNICATIONS FACILITIES ON LAND OTHER THAN PUBLIC RIGHT-OF-WAY; AND FINDING THE SAME EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

#### SECTION 8. Standard Conditions of Approval for Permits Under MMC Chapter 17.46.

A. **Generally.** In addition to any supplemental conditions imposed by the Planning Director or Planning Commission, as the case may be, all development permits or conditional use permits granted for wireless communications facilities subject to this Chapter 17.46 shall be subject to the following conditions, unless modified by the approving authority:

1. The permittee shall defend, indemnify, and hold harmless the city or any of its boards, commissions, agents, officers, and employees from any claim, action or proceeding against the city, its boards, commission, agents, officers, or employees to attack, set aside, void, or annul, the approval of the project, or to hold the City liable in whole or in part as a result of the engineering, design, construction or operation of the facility. The City shall promptly notify the provider(s) of any such claim, action or proceeding if the city bears its own attorney's fees and costs, and the city defends the action in good faith.
2. The permittee shall be strictly liable for interference caused by its facilities with city communications systems. The permittee shall be responsible for costs for determining the source of the interference, all costs associated with eliminating the interference (including but not limited to filtering, installing cavities, installing directional antennas, powering down systems, and engineering analysis), and all costs arising from third party claims against the city attributable to the interference.
3. Subsequent submittals for this project shall be in substantial compliance with the plans date-stamped received by the Planning Department on \_\_\_\_\_. The project shall comply with all conditions of approval stipulated in the referral sheets attached to the agenda report for this project. In the event the project plans conflict with any condition of approval, the condition shall take precedence and revised plans shall be submitted and approved by the Planning Director prior to the Environmental Sustainability Department for plan check.
4. The permit and rights conferred in this approval shall not be effective until the permittee signs, notarizes and returns the Acceptance of Conditions Affidavit accepting the conditions set forth herein. The applicant shall file this form with the Planning Department within 30 days of this decision or prior to issuance of any development, conditional use, building, electrical or encroachment permit.

5. The applicant shall digitally submit a complete set of plans, including the items required in Condition No. 6 to the Planning Department for consistency review and approval prior to plan check and again prior to the issuance of any building or development permits.
6. The Notice of Decision (including the signed and notarized Acceptance of Conditions Affidavit) shall be copied in its entirety and placed directly onto a separate plan sheet(s) to be included in the development plans prior to submitting any development permits from the City of Malibu Environmental Sustainability Department and encroachment permit.
7. A development permit or conditional use permit, as applicable, shall be valid for a period of ten (10) years from issuance, unless pursuant to another provision of the Code or these conditions, it expires sooner or is terminated. At the end of ten (10) years from the date of issuance, such development or conditional use permit shall automatically expire, unless an extension or renewal has been granted. A person holding a development permit or conditional use permit must either (1) remove the facility within thirty (30) days following the permit's expiration (provided that removal of support structure owned by City, a utility, or another entity authorized to maintain a support structure need not be removed, but must be restored to its prior condition, except as specifically permitted by the City); or (2) prior to expiration, submit an application to renew the permit, which application must, among all other requirements, demonstrate that the impact of the wireless facility cannot be reduced. The wireless facility must remain in place until it is acted upon by the City and all appeals from the City's decision exhausted.
8. The installation and construction authorized by a permit shall be completed within three (3) years after its approval, or it will expire without further action by the City unless prior to the three (3) years the applicant submit an extension request and the City, in its sole discretion, grants a time extension for due cause. The installation and construction authorized by a permit shall conclude, including any necessary post-installation repairs and/or restoration to the property, within thirty (30) days following the day construction commenced. The permittee must provide written notice to City within ten (10) days after completing construction, and may not begin operations until all City and Fire Department (if applicable) inspections have been completed and the project is found to be consistent with the permit. The expiration date shall be suspended until an appeal and/or litigation regarding the subject permit is resolved.
9. The Planning Director may grant up to four one-year extensions of the timeline, in Condition 7 above, for completing the installation and construction authorized by a development or condition use permit, if the Planning Director finds that the conditions, including but not limited to changes in the wireless ordinance under which the permit approval was issued, have not significantly changed.
10. Any questions of intent or interpretation of any condition of approval will be

resolved by the Planning Director upon written request of such interpretation.

11. All structures shall conform to the requirements of the Environmental Sustainability Department, City Public Works Department, FCC and Los Angeles County Fire Department requirements, as applicable. Notwithstanding this review, all required permits, including but not limited to an encroachment permit from the City, shall be secured.
12. Minor changes to the approved plans or the conditions of approval may be approved by the Planning Director, provided such changes achieve substantially the same results and the project is still in compliance with the MMC. An application with all required materials and fees shall be required.

### Cultural Resources

1. In the event that potentially important cultural resources are found in the course of geologic testing, work shall immediately cease until a qualified archaeologist can provide an evaluation of the nature and significance of the resources and until the Planning Director can review this information. Where, as a result of this evaluation, the Planning Director determines that the project may have an adverse impact on cultural resources, a Phase II Evaluation of cultural resources shall be required pursuant to MMC Section 17.54.040(D)(4)(b).
2. If human bone is discovered, the procedures described in Section 7050.5 of the California Health and Safety Code shall be followed. These procedures require notification of the coroner. If the coroner determines that the remains are those of a Native American, the applicant shall notify the Native American Heritage Commission by phone within 24 hours. Following notification of the Native American Heritage Commission, the procedures described in Section 5097.94 and Section 5097.98 of the California Public Resources Code shall be followed.

### Wireless Facility Conditions

1. All antennas shall meet the minimum siting distances to public/uncontrolled areas required for compliance with the FCC regulations and standards governing the environmental effects of radio frequency emissions. Permittee shall keep up-to-date on current information from the FCC in regards to maximum permissible radio frequency exposure levels. In the event that the FCC changes its guidelines for human exposure to radio frequency, permittee shall, within 30 days after any such change, submit to the Planning Director a report prepared by a qualified engineer that demonstrates actual compliance with such changed guidelines. The Director may, at permittee's sole cost, retain an independent consultant to evaluate the compliance report and any potential modifications to the permit necessary to conform to the FCC's guidelines. Failure to submit the compliance report required under this condition, or failure to maintain compliance with the FCC's guidelines for human exposure to radio frequency at all times shall constitute grounds for permit revocation.

2. All antennas shall be located so that any person walking adjacent to the transmitting surface of the antenna will be walking on a grade, which is a minimum of eight and one-half feet below the transmitting surface.
3. All antennas, equipment, and support structures shall be engineered and designed to prevent unauthorized climbing.
4. The wireless facility shall be erected, operated, and maintained in compliance with the general requirements set forth in the Standards and any specific requirements in the permit.
5. The antenna and electrical support equipment shall, at all times, be operated in a manner that conforms to the applicable health and safety standards, including those imposed by MMC Chapter 17.46 and this Resolution.
6. Wireless communications facilities and equipment must comply with the City's noise ordinance in MMC 8.24, or any successor provisions, and prevent noise and sound from being plainly audible at a distance of fifty (50) feet from the facility or within ten (10) feet of any residence.
7. The Planning Director's approval is required if a generator is to be placed onsite for temporary or permanent use.
8. All non-ground-mounted equipment associated with the application shall be located no lower than eight feet above grade or ground level on the monopole or support structure.
9. The City or its designee may enter onto the facility area to inspect the facility upon 48 hours prior notice to the permittee. The permittee shall cooperate with all inspections and may be present for any inspection of its facility by the City. The City reserves the right to enter or direct its designee to enter the facility and support, repair, disable, or remove any elements of the facility in emergencies or when the facility threatens imminent harm to persons or property. The City shall make an effort to contact the permittee prior to disabling or removing any facility elements, but in any case, shall notify permittee within 24 hours of doing so.
10. Testing of any equipment shall take place on weekdays only, and only between the hours of 8:30 a.m. and 4:30 p.m., except that testing is prohibited on holidays that fall on a weekday. In addition, testing is prohibited on weekend days.
11. Permittee shall obtain and maintain throughout the term of the permit commercial general liability insurance with a limit of five million dollars (\$5,000,000) per occurrence for bodily injury and property damage and six million dollars (\$6,000,000) general aggregate including premises operations, contractual liability, personal injury, and products completed operations. The relevant policy(ies) shall name the City, its elected/appointed officials, commission members, officers, representatives, agents, and employees as additional insureds. A true and correct copy of the policy of insurance shall constitute proof of insurance required by this Subsection. Permittee shall use its best efforts to provide thirty

(30) days' prior notice to the City of to the cancellation or material modification of any applicable insurance policy. Failure to maintain insurance consistent with this Condition shall automatically void the permit, and the permittee shall immediately deenergize and remove the facility from operation. The policy shall not have a pollution or other exclusion which excludes injuries or damages from EMF/RF exposures.

12. Prior to issuance of a City permit or encroachment permit, the permittee shall file with the City, and shall maintain in good standing throughout the term of the approval, a performance bond or other surety or another form of security for the removal of the facility in the event that the use is abandoned or the permit expires, or is revoked, or is otherwise terminated. The security shall be in the amount equal to the cost of physically removing the facility and all related facilities and equipment on the site, based on the higher of two contractor's quotes for removal that are provided by the permittee. The permittee shall reimburse the city for staff time associated with the processing and tracking of the bond, based on the hourly rate adopted by the City Council. Reimbursement shall be paid when the security is posted and during each administrative review.
13. Permittee shall not move, alter, temporarily relocate, change, or interfere with any existing structure, improvement, or property without the prior consent of the owner of that structure, improvement, or property. No structure, improvement, or property owned by the City shall be moved to accommodate a permitted activity or encroachment, unless the City determines that such movement will not adversely affect the City or any surrounding businesses or residents, and the Permittee pays all costs and expenses related to the relocation of the City's structure, improvement, or property. Prior to commencement of any work pursuant to any permit, the permittee shall provide the City with documentation establishing to the city's satisfaction that the permittee has the legal right to use or interfere with any other structure, improvement, or property to be affected by permittee's facilities.
14. No possessory interest is created by a Wireless Permit. However, to the extent that a possessory interest is deemed created by a governmental entity with taxation authority, permittee acknowledges that City has given to permittee notice pursuant to California Revenue and Taxation Code Section 107.6 that the use or occupancy of any public property pursuant to a development or conditional use permit may create a possessory interest which may be subject to the payment of property taxes levied upon such interest. Permittee shall be solely liable for, and shall pay and discharge prior to delinquency, any and all possessory interest taxes or other taxes, fees, and assessments levied against permittee's right to possession, occupancy, or use of any public property pursuant to any right of possession, occupancy, or use created by this development or conditional use permit.
15. If not already completed, permittee shall enter into the appropriate agreement with the City, as determined by the City, prior to constructing, attaching, or operating a facility on municipal infrastructure. This permit is not a substitute for such agreement.
16. If a facility is not operated for a continuous period of three (3) months, the Wireless Permit and any other permit or approval therefor shall be deemed abandoned and terminated automatically, unless before the end of the three (3) month period (i) the Director has determined that the facility has resumed operations, or (ii) the City has received an

application to transfer the permit to another service provider. No later than ninety (90) days from the date the facility is determined to have ceased operation, or the permittee has notified the Director of its intent to vacate the site, the permittee shall remove all equipment and improvements associated with the use and shall restore the site to its original condition to the satisfaction of the Director. The permittee shall provide written verification of the removal of the facilities within thirty (30) days of the date the removal is completed. If the facility is not removed within thirty (30) days after the permit has been discontinued pursuant to this subsection, the site shall be deemed to be a nuisance, and the City may cause the facility to be removed at permittee's expense or by calling any bond or other financial assurance to pay for removal. If there are two (2) or more users of a single facility or support structure, then this provision shall apply to the specific elements or parts thereof that were abandoned but will not be effective for the entirety thereof until all users cease use thereof.

17. In the event the City determines that it is necessary to take legal action to enforce any of these conditions, or to revoke a permit, and such legal action is taken, the permittee shall be required to pay any and all costs of such legal action, including reasonable attorney's fees, incurred by the City, even if the matter is not prosecuted to a final judgment or is amicably resolved, unless the City otherwise agrees, in its complete discretion, to waive said fees or any part thereof.
18. Interference with city communications systems and other governmental emergency systems is prohibited. Further, no permit issued pursuant to this chapter of the City Code establish any guarantee or warranty that Licensee's facility will be free from interference from city or third-party communication systems.

### Construction

1. Installation hours shall be limited to Monday through Friday from 7:00 a.m. to 7:00 p.m. and Saturdays from 8:00 a.m. to 5:00 p.m. No installation activities shall be permitted on Sundays and City-designated holidays. The restricted work hours described in this condition do not apply to emergency maintenance necessary to protect health or property. The City of Malibu may issue a Stop Work Order if permittee violates this condition. Construction activities shall be conducted in compliance with, and abide by, all applicable safety codes and permit conditions.
2. All sites must be designed and build to the standards of ANSI/APCOPublic Safety Grade Site Hardening Requirements, also referred to as "APCO ANSI 2.106.1-2019".

### Site Specific Conditions

1. In the event that the electric service provider does not currently offer an alternative metering option, the permittee shall remove the above-grade electric meter when such option becomes available. Prior to removing the above-grade electric meter, the permittee shall apply for any encroachment and/or other ministerial permit(s) required to perform the removal. Upon removal, the permittee shall restore the affected area to its original condition that existed prior to installation of the equipment.

2. The permittee acknowledges that the City specifically includes conditions of approval related to (a) painting, coloring or finishing the equipment to match the monopole or support structure; (b) undergrounding all equipment to the extent possible; (c) installing equipment within shrouds, conduits and risers as concealment elements engineered and designed to integrate the wireless facility with the surrounding built and natural environment; and (d) specific structural, seismic, electrical, fire and operating/maintenance requirements. Any future modifications to the permittee's wireless facility must maintain or improve all concealment elements and safety precautions.
  
3. Before the permittee submits any applications for construction, encroachment, excavation or other required permits in connection with this permit, the permittee must incorporate a true and correct copy of this permit, all conditions associated with this permit and any approved photo simulations into the project plans (collectively, the "Approved Plans"). The permittee must construct, install and operate the wireless facility in substantial compliance with the Approved Plans as determined by the Director or the Director's designee. Any substantial or material alterations, modifications or other changes to the Approved Plans, whether requested by the permittee or required by other departments or public agencies with jurisdiction over the wireless facility, must be submitted in a written request subject to the Director's prior review and approval, who may refer the request to the original approval authority if the Director finds that the requested alteration, modification or other change substantially deviates from the Approved Plans or implicates a significant or substantial land-use concern.
  
4. The permittee shall install and at all times maintain in good condition a "Network Operations Center Information" and "RF Caution" sign on the utility pole no less than three (3) feet below the antenna (measured from the top of the sign) and no less than nine (9) feet above the ground line (measured from the bottom of the sign). Signs required under this condition shall be installed so that a person can clearly see the sign as he or she approaches within three (3) feet of the antenna structure. If any person on or within the property is or may be exposed to emissions that exceed applicable FCC uncontrolled/general population limits at any time the sign shall expressly so state, and provide instructions on how persons can avoid any such exposure. The sign shall also include the name(s) of the facility owner(s), equipment owner(s) and operator(s)/carrier(s) of the antenna(s), property owner name, as well as emergency phone number(s) for all such parties. The sign shall not be lighted, unless applicable law, rule or regulation requires lighting. No signs or advertising devices other than required certification, warning, required seals or signage, other signage required by law, this Chapter, any City or applicable state code or the Los Angeles County Fire Department Chief or his or her designee shall be permitted. The sign shall be no larger than two (2) square feet.
  
5. The permittee shall ensure that all signage complies with FCC Office of Engineering and Technology Bulletin 65, CPUC General Order 95 or American National Standards Institute C95.2 for color, symbol, and content conventions. All such signage shall at all times provide a working local or toll-free telephone number to its network operations center, and such telephone number shall be able to reach a live person who can exert transmitter power-down control over this site as required by the FCC.

6. In the event that the FCC changes any of radio frequency signage requirements that are applicable to the project site approved herein or ANSI Z535.1, ANSI Z535.2, and ANSI C95.2 standards that are applicable to the project site approved herein are changed, the permittee, within 30 days of each such change, at its own cost and expense, shall replace the signage at the project site to comply with the current standards.
7. The permittee shall maintain the paint, color and finish of the facility in good condition at all times.
8. All improvements, including foundations, and appurtenant ground wires, shall be removed from the property and the site restored to its original pre-installation conditions within 90 days of cessation of operation or abandonment of the facility.
9. Build-Out Conditions.
  - a. Permittee shall not commence any excavation, construction, installation or other work on the project site until and unless it demonstrates to the City Public Works Department that the project complies with these Conditions along with all applicable laws, regulations, codes and other rules related to public health and safety, including without limitation all applicable provisions in California Public Utilities Commission General Order 95 and MMC Chapters 8.12, 8.24 and 15.08.
  - b. To the extent that a pole owner or any provision in the MMC or this resolution require greater or more restrictive standards than California Public Utilities Commission General Order 95, if applicable, those standards shall control.
10. Permittee shall at all times maintain compliance with all applicable federal, State and local laws, regulations, ordinances and other rules, including Americans with Disabilities Act (ADA) requirements.
11. The permittee shall cooperate with all inspections. The City and its designees reserve the right to support, repair, disable or remove any elements of the facility in emergencies or when the facility threatens imminent harm to persons or property.
12. Permittee shall at all times maintain accurate contact information for all parties responsible for the facility, which shall include a phone number, street mailing address and email address for at least one natural person. All such contact information for responsible parties shall be provided to the Planning Department at the time of permit issuance and within one business day of permittee's receipt of City staff's written request.
13. Permittee shall undertake all reasonable efforts to avoid undue adverse impacts to adjacent properties and/or uses that may arise from the construction, operation, maintenance, modification and removal of the facility.
14. The site and the facility must be maintained in a neat and clean manner and in accordance with all approved plans and conditions of approval.

15. Permittee shall promptly remove any graffiti on the wireless facility at permittee's sole expense within 48 hours after notice.

#### Prior to Operation

1. The applicant shall request a final Planning Department inspection and final building inspection by the City of Malibu Environmental Sustainability Department immediately after the wireless facility has been installed and prior to the commencement of services.
2. Within thirty (30) calendar days following the installation of any wireless communications facilities, the applicant shall provide to the Planning Department with a field report prepared by a qualified engineer verifying that the unit has been inspected, tested, and is operating in compliance with FCC standards. Specifically, the on-site post-installation radiofrequency (RF) emissions testing must demonstrate actual compliance with the FCC OET Bulletin 65 RF emissions safety guidelines for general population/uncontrolled RF exposure in all sectors. For this testing, the transmitter shall be operating at maximum operating power, and the testing shall occur outwards to a distance where the RF emissions no longer exceed the uncontrolled/general population limit. Such report and documentation shall include the make and model (or other identifying information) of the unit tested, the date and time of the inspection, a certification that the unit is properly installed and working within applicable FCC limits, and a specific notation of the distance from the transmitter at which the emissions are equal to or less than the uncontrolled/general population limit.
3. The operation of the approved facility shall commence no later than one (1) month after the City completes its post-installation inspections of the facility, any issues with the facility are resolved, and the City receives the RF testing report required in the condition of approval above, or the development or conditional use permit will expire without further action by the City.

#### Fixed Conditions

1. Violation of any of the conditions of this approval shall be cause for revocation and termination of all rights thereunder.

#### Eligible Facilities Requests

All permits for an eligible facilities requests under MMC Chapter 17.46 shall be subject to the following conditions and all of the other conditions of approval placed on a Wireless Permit, unless modified by the approving authority:

1. Any permit granted in response to an application qualifying as an eligible facilities request shall be subject to the terms and conditions of the underlying permit.
2. The City's grant or grant by operation of law of an eligible facilities request permit constitutes a federally-mandated modification to the underlying permit or approval for the subject tower or base station. Notwithstanding any permit duration established in another permit condition, the City's grant or grant by operation of law of a eligible facilities request permit will not extend the permit term for the underlying permit or any other underlying

regulatory approval, and its term shall be coterminous with the underlying permit or other regulatory approval for the subject tower or base station.

3. The City's grant or grant by operation of law of an eligible facilities request does not waive, and shall not be construed to waive, any standing by the City to challenge Section 6409(a) of the Spectrum Act, any FCC rules that interpret Section 6409(a) of the Spectrum Act, or any modification to Section 6409(a) of the Spectrum Act.

#### Small Cell Facilities

In addition to the other conditions of approval placed on a Wireless Permit, all permits for a small cell facility under MMC Chapter 17.46 shall be subject to the following additional condition, unless modified by the approving authority:

1. The City's grant of a permit for a small cell facility request does not waive, and shall not be construed to waive, any standing by the city to challenge any FCC orders or rules related to small cell facilities, or any modification to those FCC orders or rules.

**Appendix 5**  
**Application Requirements and Conditions for Fire Prevention and Management**  
**by Susan Foster**

March 20, 2022

Item 5: Project No. 2021-002931-(1-5) / Advance Planning Case No. RPPL2021007939 / Wireless Facility Ordinance

Dear Los Angeles County Department of Regional Planning & Los Angeles County Board of Supervisors:

I'm writing in regards to the above referenced wireless facilities ordinance pertaining to both macro towers and small cells.

I am a Fire Safety Consultant asked by then-Mayor Mikke Pierson of Malibu to assist in creating an ordinance for wireless communications facilities (WCFs) that would elevate the level of safety for Malibu by reducing the risk of telecommunications fires.

I worked with an interdisciplinary team that included an attorney with extensive telecommunications and utilities experience and a Professional Engineer whose specialty was electrical engineering with decades of experience working in utilities. The engineer was a licensed PE in the state of California.

We knew that the 2007 Malibu Canyon Fire was determined by the CPUC to be the fault of four wireless carriers, Sprint (now owned by T-Mobile), Verizon, AT&T and NextG (now owned by Crown Castle) and SCE which had rented out space on their power poles. Three of those pole snapped in the wind during a Santa Ana and sparks from the overloaded wireless communications antennas ignited the dry grass below. In the end, the CPUC accused all four carriers as well as SCE of attempting to mislead fire investigators.

It was through work conducted by our team after we were actively engaged in attempting to come up with a protocol that would require electrical engineering rigor for cell towers coming into Malibu that we discovered that the \$6 billion Woolsey fire (November 2018) was started, at least in part, by a downed telecommunications lashing wire. We are deeply concerned that the rapid expansion of fiber that is essential for 5G is being strung sometimes by non-union, therefore less trained, labor. We suspect that improper tools are being used to crimp the wire, and in general we are deeply concerned about the lack of engineering rigor with respect to telecommunications equipment.

I'm going to urge you to utilize the same Electric Fire Safety Protocol in both macro towers and small cells in Los Angeles County that we included in the Malibu protocol which was passed unanimously by the Malibu Planning Commission and the Malibu City Council in 2021.

In order to justify bringing engineering rigor in at the city, and in your case the County level, we first explained our discovery of the exemptions in electrical and fire safety codes that apply to telecommunications. Every city and county we advise is quick to say they comply with all

applicable electric and fire safety codes. In other words, they are telling us they are just fine; everything is covered.

Yet everything is not covered. I will explain the exemptions and then you will understand why your responsibility with this knowledge has just become elevated, and it will help explain why four of the major California fires have been linked to telecommunications equipment [Guejito Fire which fed into the Witch Creek Fire, San Diego, 2007; Malibu Canyon Fire, 2007; Woolsey Fire, Malibu and surrounding area, 2018; Silverado Fire [T-Mobile lashing wire), Irvine, 2020].

First I will explain the exemption to the National Electric Code, which all parties — federal, state and local — say they adhere to. And they think they adhere to. But please note under (B)(4) below:

NFPA 70@•. National Electrical Code@

(B) Not Covered. This Code does not cover the following:

(4) Installations of communications equipment under the exclusive control of communications utilities located outdoors or in building spaces used exclusively for such installations

Next we must look at what California does. Through GO 159 the CPUC balances state interests against local concerns and barring an exercise of authority by CPUC, you can see that the design procedures are overseen at the local level. The state is affirming that localities are in the best position to determine which areas require an extra measure of safety at the application stage, at the construction stage and on an ongoing basis.

California/Public Utilities Commission of the State of California:

General Order 159: Rules relating to the construction of  
Commercial Mobile Radio Service Facilities in California.

Adopted May 8, 1996, Effective May 8, 1996  
by Decision 96-05-035, R.90=01-12

#### SECTION 11 — PURPOSE

The Commission has previously found in numerous decisions authorizing specific cellular systems that construction of cellular systems generally serves the public convenience and necessity. The Commission has also found that the impacts of cell sites and MTSOs are highly localized. The Commission recognizes that the goals and interests of local government and the state may create competing demands. This General Order balances the above-mentioned statewide interests with local concerns regarding

the siting, design, and construction of cell sites and MTSOs. The procedures described herein should apply uniformly on a statewide basis.

Finally, we look at Los Angeles County. The CPUC's deferral to localities is reiterated in your own Ordinance. It is the word "design" in the fourth line under "B." That references engineering.

## Los Angeles County Code of Ordinances

### B. Deference to Local Government

The Commission acknowledges that local citizens and local government are often in a better position than the Commission to measure local impact and to identify alternative sites. Accordingly, the Commission will generally defer to local governments to regulate the location and design of cell sites and MTSOs including (a) the issuance of land use approvals; (b) Acting as lead Agency for purposes of satisfying the CEQA and (c) the satisfaction of noticing procedures for both land use approvals and CEQA procedures.

#### § 80-3. scope

---

Latest version.

- The provisions of this Code shall apply to the construction, alteration, moving, repair and use of any electrical wiring on any premises within the unincorporated area of the County of Los Angeles and to such work or use by the County of Los Angeles within any incorporated city not exercising jurisdiction over such work or use.

The provisions of this Code shall not apply to public utilities; or to electrical wiring for street lighting or traffic signals located primarily in a public way; or to mechanical equipment not specifically regulated in this Code.

Where, in any specific case, different sections of this Code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

Except as hereinafter changed or modified, the building standards contained in the National Electrical Code of the National Fire Protection Association, Inc., which are published in the California Building Standards Code, are applicable to all occupancy groups and uses throughout the County of Los Angeles. Amendments to the building standards contained in the National Electrical Code, by state agencies, are applicable only to those occupancies or uses which the state agency making the amendment is authorized to regulate.

(Ord. 2002-0077 3, 2002.)

Below please find the criteria we used in Malibu for the Electric Fire Safety Protocol which must be included as an Application Requirement so the carriers know what is required of them before they even put their application down on the planning department desk. This way the County of Los Angeles can know that all of these tests have been conducted and sign off on by a Professional Engineer with the carrier.

I urge Los Angeles County to adopt what the City of Malibu has already adopted unanimously. This restores engineering rigor, both electrical and structural, on the front-end. This means that the applicant comes to the Department of Planning with plans that display proof using the same degree of engineering rigor as for an illuminated sign on the corner convenience store. The County of Los Angeles should expect nothing less.

The ordinance offered as an alternative to the County of San Diego includes the specific tests Malibu requires. In my letter I am including what you will also find in my attached White Paper, and that is the reason for requiring each document or test, and why the study is important.

**PROTECTING MALIBU’S FUTURE:  
PREVENTING ELECTRICAL FIRES IN CELL TOWERS BY INTRODUCING  
ENHANCED BUT GENERALLY ACCEPTED ENGINEERING DESIGN RIGOR AND  
ADEQUATE PROOF OF WORK IN THE APPLICATION**

**Susan Foster & Tony Simmons, P.E.**

**[Updated 2/16/2022; S. Foster]**

## INTRODUCTION

The fire risk in Malibu is extreme. Wireless Communication Facility (WCF) proliferation increases the possibility of electrical fires. As such, electrical fire safety must be a priority for the City.

A group of Malibu residents (referred to here as the Community) have been attempting to work with the City to help minimize Malibu’s fire risk from WCF installations. This white paper explains the Community’s proposed safety design and application content requirements. These proposed requirements are tailored to Wireless Communications Facility installations in areas with dry vegetation, like Malibu. Some of the language was taken from ordinances in Encinitas and Sebastopol, while much of it is new. The new language is necessary because of the recent discovery that national, state and local electrical codes have expressed or implicit exemptions for “public utilities.” *See, e.g.,* California Electric Code Section 89.101.3.3(4) and (5) and “public utility” exclusion in Los Angeles County Electric Code Sections 80-3 and 80.6. There are similar exemptions in NFPA documents. Therefore, merely adopting the Electric Code, as Staff proposes, will do nothing. Malibu will have no electrical safety standards for WCFs unless our proposals are adopted.

There are generally accepted standards for most other buildings and structures, including installations that house extensive and complicated electronics with similar characteristics to those employed as part of a WCF. The Community’s proposed design standards incorporate those standards. In other words, we basically eliminated the “exception” so the general standards can apply. As a result, and consistent with FCC rules, Malibu will be enforcing “generally applicable building, structural, electrical, and safety codes and other laws codifying objective standards reasonably related to health and safety.” *In the Matter of Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies; Acceleration of Broadband Deployment: Expanding the Reach and Reducing the Cost of Broadband Deployment by Improving Policies Regarding Public Rights of Way and Wireless Facilities Siting; 2012 Biennial Review of Telecommunications Regulations*, 29 FCC Rcd 12865, 12945, ¶188 (2014).

Separately, the Community’s proposal sets out the information that must be contained in the application. The design is important, but it is equally crucial that applicants be required to show their work, provided in a way that allows for independent verification and analysis. Only then can Malibu residents be assured that every possible step has been taken to minimize the risk of yet another wildfire caused or made worse by equipment breakdown in a WCF.

This paper provides specific and detailed explanations for the requirements we propose to help mitigate the profound fire risks in Malibu. It explains what we need by way of engineering up-front design and what is required for the telecommunications carrier to “show its work” in the permit application. Carriers will have their own professional engineers run their equipment through basic tests or produce standard design diagrams with an engineer’s seal. Those scrutinizing the application will be able to independently verify the work was indeed done by the appropriate qualified personnel. This design and application content rigor should catch most design flaws that could, if left undetected, put Malibu at greater risk for fire.

Malibu bears greater risk if telecom cuts corners in the engineering and design process. Our proposal requires just over a dozen documents in the Application, signed off on by a professional engineer employed by telecom. Those documents will be reviewed by Malibu’s permitting and enforcement departments and, if everything is in order, facilities will be approved for installation in the city. We are simply asking carriers to do due diligence and submit the right paperwork to the City when they apply. If they are going to come into Malibu, they must do so safely. It’s that simple.

We present examples below of failure to scrutinize electrical equipment and utilize professional engineers to help protect life, health and property. These examples will be familiar to every member of the Planning Commission and, we trust, will serve as a reminder to all of us that engineering rigor and proof of work applied early in the process will protect the City from potentially catastrophic failures later on.

We also provide several examples of the ways electrical fires can start in cell towers and why the new small cell infrastructure poses unique threats to Malibu. In addition, we demonstrate that setbacks and separation will accommodate telecommunications yet allow enough space and distance for residents to escape should an electrical fire still occur. Electrical fires cannot be extinguished by homeowners or even firefighters until power to the facility is cut by the utility. In some instances, de-energization of a cell tower has taken over 60 minutes. In such a circumstance, distance from residences, schools and other buildings may mean the difference between life and death.

Homeowners should never fight a cell tower fire even if it is directly in front of their home. To fight an electrical fire before the tower has been de-energized by the local utility (10 to 60 minutes) risks electrocution. Residents of Malibu must flee their homes in the event of an electrical fire and that is why distance between towers and setbacks from homes is critical.

Finally, we urge the Planning Commission and Staff to recognize that the federal government and public safety officials consider wireless infrastructure to be essential infrastructure. Therefore, any hesitation on the part of Staff to require our electric fire safety protocol may be allayed by appreciating that the infrastructure itself needs to be protected. Attempts by carriers to introduce slipshod and inferior design, materials and products in Malibu should be rejected.

We have been asked if our electric fire safety protocol is new and if electric fire safety requirements have been adopted by other cities. The answer is yes, and the answer is no. We know some cities are beginning to write into their small cell ordinances that electric codes should

be adhered to because of the growing awareness of electrical fire risk in cell towers very close to homes and schools. As such, cities have attempted to require electric fire safety protocols. But it appears most cities have not discovered the “loophole” arising from the public utility exception that renders their efforts to protect their cities ineffective. As far as we can tell, Malibu will be the first to identify this problem and actually force an objective, generally applicable standard for electric fire safety.

Our proposed electric fire safety requirements are the result of in-depth collaboration between Tony Simmons, P.E., a professional engineer with decades of electric fire safety experience and Susan Foster, writer and an Honorary Firefighter with the San Diego Fire Department and a member of the 2001 Task Force in San Diego County that created the County’s first wireless ordinance. That ordinance survived a challenge all the way to the U.S. Supreme Court. Susan Foster has worked with rank-and-file firefighters in California and across the country over the last 20 years on the issue of RF radiation health and safety.

Mr. Simmons is a professional electrical engineer licensed by the States of California and Nevada. He is a recognized subject matter expert on electrical safety. As an employee of NV Energy, which served customers in California and Nevada, he was responsible for ensuring that no gap existed between the safety standards for customer-owned equipment and utility-owned equipment. Mr. Simmons designed a specialized test facility that integrated electrical equipment from East Asia, Europe, and the United States. This test site incorporated grounded and ungrounded electrical systems from all three regions and required Mr. Simmons to integrate standards from three regions to adhere to the technical requirements of the U.S. National Electric Code.

Residents and city planners in various California cities have contacted Susan Foster seeking assistance in their efforts to create safer WCF ordinances by taking electric fire safety into account. Additionally, Susan Foster has met with city councilmembers and engineering/IT personnel in several cities in Colorado, a state that also experienced an unprecedented fire threat in 2020 and more recently the December 2021 Marshall Fire which burned 6000 urban and suburban acres in six hours in Boulder County. Similarly, Tony Simmons’ expertise has been requested by several California cities regarding electric fire safety and engineering. Mr. Simmons and Susan Foster are working on electric fire safety amendments for three Colorado cities.

As it relates to Malibu, Susan Foster and Tony Simmons have worked over the past six months with attorney W. Scott McCollough, who has an extensive 37-year career in law and policy and was the Assistant Texas Attorney General responsible for utility matters, to arrive at our proposed electric fire safety requirements so as to minimize the chances of WCF electrical fires in Malibu. We did not know, until we pooled our collective knowledge and compared federal and state laws and local ordinances and regulations, that telecom was exempt from otherwise generally applicable codes and standards. We anticipate telecom is aware of the exception but chose to remain silent. This problem has now arrived at Malibu’s doorstep and must be solved. We hope it will be resolved in favor of ensuring the safety of the city and its residents. News of this issue and problem is spreading, but Malibu has the opportunity – and responsibility – to lead the way, as it is known to do in matters of great importance.

## WHY ELECTRICAL FIRE SAFETY?

We propose fire safety requirements that consider Malibu's unique geographic location, its ongoing seismic activity, a marine climate conducive to expedited corrosion of WCF equipment, an abundance of dry brush, limited escape routes out of town, and year-round tourism which can swell the population by 4,000 visitors on any given weekend – adding to the burden on access/exit roads.

Fire risks in Malibu are not hypothetical conjecture. This city has burned twice just in the last 15 years. Over the last nine decades, at least 30 wildfires have destroyed parts of this coastal community, with the most recent Woolsey Fire (the largest in recorded history), consuming almost 100,000 acres. The ongoing, severe drought in California, along with record high temperatures, makes the focus on fire prevention more urgent than ever.

Preventing fires in Malibu has been a full-time job for Mayor Mikke Pierson since the beginning of his tenure on City Council. He was elected in 2018 two days before the Woolsey Fire broke out. Over 400 homes were lost with catastrophic impact on Malibu; many residents have still not made it through the permit stage for rebuilding. From a recent posting in Malibu's News Carousel:

*“Wildfire has always been Malibu's number-one public safety threat, but the size, duration and severity of the Woolsey Fire was unprecedented, and showed us the dangerous new normal of drought, climate change and California mega-fires,” said Mayor Mikke Pierson. “I am proud of the progress we have made in developing strategies to be even more prepared for disasters, including this siren system, which could be a powerful step toward community-wide preparedness.”*

The documents provided to the Planning Commission by Staff do not show sufficient commitment to treating fire as Malibu's number one public safety threat, as articulated by Mayor Pierson. Our plea, and that of the Community, is that the Planning Commission and City Council rectify this error. There must be strong and specific design, application content and inspection language in the Ordinance and Resolution. The whole point of applying electric engineering rigor is to make sure that when a device fails – and they all do at some point – it fails safely. Without this kind of rigor for WCFs, Malibu will expose itself to significant risk of yet another preventable fire.

We have therefore been detailed and specific about what is required to reduce the risk. We are not asking for anything that is not already required of every business in Malibu that wants to install parking lot lighting, a sign in front of their place of business, or install complicated electronics inside their building. Citizens have a right to demand engineering rigor for the projects coming into Malibu extremely close to people's homes, schools, daycare centers, parks, places of business, restaurants and in every facet of life.

We presently have no idea what the Planning Director will require in the applications. If application content is left entirely up to the Planning Director, the form can be changed at whim, especially after a personnel change. The application, however, is not just for Staff. The Planning Commission extensively relies on it, as does anyone participating in the application process.

Unlike Staff and the Commission, public participants have no right or practical ability to require additional information beyond what is in the application. Their ability to reasonably participate and provide input is entirely dependent on the quantity and quality of the information in the application. The public needs and deserves more than the Staff materials provide.

The Community wants more rigorous requirements, particularly relating to up-front design by qualified and licensed personnel, and full disclosure in the application stage. In other words, we expect every application submitted to Malibu to have 14 documents indicating successful completion of a test, a diagram, a design schematic, and a list of any potentially hazardous substances, all signed and sealed by a licensed professional engineer. The Community's protocol was designed by an electrical engineer with decades of experience in applying engineering rigor to protect life, health and property. He knows what is needed for both design and proof of work. He knows what is feasible and reasonable.

To date, our fire safety proposals have been rejected by Staff/City Attorneys. We are particularly concerned that not only does our groundbreaking electric safety protocol get removed from every draft, but so does the fire safety wording we adopted from ordinances already passed by Encinitas and Sebastopol. That makes no sense for a city that has suffered two catastrophic fires in the last 15 years, and 30 over the last 90 years.

## **DESIGN AND PROOF OF WORK FOR THE APPLICATION**

Tony Simmons, P.E. has synthesized an electric fire safety protocol tailored to the specific needs of fire-prone Malibu. The engineering documents listed below in our 14-step electric fire safety protocol are required to demonstrate compliance with the generally applicable technical requirements of the following codes: the National Electric Code, the California Electric Code and the Los Angeles County Electric Code. Item (N) below indicates text pertaining to structural engineering requirements that, unlike the electrical safety portions, has been accepted and incorporated by Staff.

Each of the 14 steps below represents a document to be included in each WCF application. Each document must be sealed by a professional engineer pursuant to the California Professional Engineer's Act. Documents A through E are routinely produced by commercially available software such as E-TAP or POWER TOOLS. Documents F through H are produced with CAD programs such as AutoCAD. Document I is required by all codes. Document J is a reaffirmation that all parties understand the service entrance switch is not readily accessible. Documents K, L, and M include information all employers are required to provide to their workers. Document N has been accepted by Staff.

(v) **Electrical and Structural Safety Information.** The following engineering documents prepared under the responsible charge of and sealed by a California licensed professional engineer must be included in the application:

- (A) A short circuit and coordination study ("SCCS") calculated pursuant to the IEEE 551-2006: Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems or the latest version of that standard. The study must

demonstrate the protection devices will ensure the equipment enclosure will not be breached. The SCCS must include analysis of Voltage Transient Surges due to contact of conductors of different voltages;

REASON FOR REQUIRING THIS DOCUMENT: This study is required to demonstrate the installation complies with NEC Articles 110.9, 110.10, 110.16 and 240.

WHY THIS STUDY IS IMPORTANT: All electrical equipment will fail. This study ensures that electrical equipment will not catastrophically fail. As an example, electrical conductors may rub together and damage the insulation, allowing excessive current to flow. This study ensures that the fuse or circuit breaker de-energizes the circuit fast enough to prevent arcing or fire. This study could have identified beforehand that meters would catastrophically fail in Stockton in 2015. This study can ensure that a WCF mounted on poles with transmission and distribution circuits, like the pole on the corner of Malibu Canyon Road and Harbor Vista, does not fail like electric meters did in Stockton in 2015.

(B) A one-line diagram of the electrical system;

REASON FOR REQUIRING THIS DOCUMENT: This diagram provides a map of the electrical installation and serves as the primary reference for all the other documents.

WHY THIS DIAGRAM IS IMPORTANT: This document allows less experienced electrical workers to quickly trouble shoot electrical malfunctions and failures and to identify a de-energization point.

(C) Voltage Drop & Load Flow Study;

REASON FOR REQUIRING THIS DOCUMENT: This Study proves the electrical conductors are large enough to ensure that equipment supplied by the electricity flowing through conductors operate within the design range for that item of equipment.

WHY THIS STUDY IS IMPORTANT: If the voltage is too low or too high, electrical equipment may not operate correctly or be damaged.

(D) Load Calculation;

REASON FOR REQUIRING THIS DOCUMENT: The load calculation ensures each item of equipment is sized to safely carry the design load.

WHY THIS DOCUMENT IS IMPORTANT: This document lists all load connected to the electrical system.

(E) Panel Directories;

REASON FOR REQUIRING THIS DOCUMENT: Panel Directories are provided to show workers which switch or breaker de-energizes a specific circuit or piece of equipment.

WHY THIS DOCUMENT IS IMPORTANT: The panel directory is required by Electric Codes so that electrical workers or less experienced individuals can quickly de-energize a circuit in an emergency without a “trial and error” approach.

- (F) A plot plan showing the location of the mounting structure including address, or structure designation, or GPS location;

REASON FOR REQUIRING THIS DOCUMENT: This document is necessary to quickly identify the location for prompt emergency and non-emergency response.

WHY THIS DOCUMENT IS IMPORTANT: This document shows the exact location of the WCF and the access route. Power poles are commonly assigned addresses that may be located several hundred feet from the actual location.

- (G) A plot plan showing the location of the service disconnecting means;

REASON FOR REQUIRING THIS DOCUMENT: This document is necessary to demonstrate the location of the switch or circuit breaker that separates the customer electrical system from the utility electrical system. This is commonly called the “main switch” or the “main circuit breaker”.

WHY THIS DOCUMENT IS IMPORTANT: A WCF has been proposed on a streetlight pole on Cross Creek Road. The WCF is powered from one electric service. The streetlight is powered from a separate electric service. In order to suppress a fire, the power to the streetlight and the power to the WCF must both be de-energized. This plan shows both de-energization points. Service disconnects for streetlights may be several hundred feet away on a different street.

- (H) An elevation drawing of the equipment and the service disconnecting means;

REASON FOR REQUIRING THIS DOCUMENT: This drawing shows how the equipment will look once installed. It is critical to ensure the workspace has adequate room to operate safely.

WHY THIS DOCUMENT IS IMPORTANT: Performing work on electrical equipment is hazardous. Workers are entitled to sufficient room to safely work and to escape if an arc develops.

- (I) A demonstration there will be signage as required by the California Electric Code or the Los Angeles County Fire Department Chief or his or her designee;

REASON FOR REQUIRING THIS DOCUMENT: The CEC requires that electric equipment be labeled.

WHY THIS DOCUMENT IS IMPORTANT: This is necessary to ensure that first responders or electrical workers safely de-energize the correct equipment.

(J) A demonstration the service disconnecting means shall be mounted at an elevation determined by the Los Angeles County Fire Chief or his or her designee in conjunction with the electric utility;

REASON FOR REQUIRING THIS DOCUMENT: The CEC specifies that the service disconnecting means be readily accessible, which generally means operatable without a ladder. To prevent vandalism of communication systems in public right of ways, the service disconnecting means may be mounted out of reach from the ground.

WHY THIS DOCUMENT IS IMPORTANT: To prevent casual vandalism, the service disconnect may be mounted at a height not reachable from ground level.

(K) A demonstration there will be instructions for deenergizing the equipment by First Responders.

REASON FOR REQUIRING THIS DOCUMENT: Certain electric equipment must be de-energized in a specific sequence to ensure safety.

WHY THIS DOCUMENT IS IMPORTANT: Certain electrical equipment can create an additional hazard if de-energized in the incorrect sequences.

(L) A list of toxic substances that may develop during arcing or fire that may impede fire suppression efforts;

REASON FOR REQUIRING THIS DOCUMENT: The intense heat of an electrical arc may turn non-hazardous substances into hazardous substances. Special protective equipment may be required.

WHY THIS DOCUMENT IS IMPORTANT: Electric arcs instantly reach temperatures of thousands of degrees. Normally non-hazardous material may become hazards. Metals may vaporize and damage lungs.

(M) A list of hazards that may develop during arcing or fire that may impede fire suppression efforts;

REASON FOR REQUIRING THIS DOCUMENT: Arcing or fire may create a pressure wave that can imperil life, health and property.

**WHY THIS DOCUMENT IS IMPORTANT:** Electric arcing can vaporize copper or aluminum. Copper expands 67,000 times when converted from solid to vapor, which can cause an air blast that throws an individual several feet with fatal force.

- (N) Structural Safety Information. The structural/civil engineering documents as recommended by a California licensed professional civil or structural engineer employed by Center for Municipal Solutions.

NOTE: The proposed ordinance includes a standard recommended by APCO/ANSI. This issue has been adequately addressed in the documents provided by Staff.

Every draft we provided to Staff included the 14 documents listed above. As stated, each step represents a diagram, design schematic, or list of potentially hazardous substances that must be signed off on by a professional engineer as required in our fire safety and structural engineering protocol. Staff has persistently removed the protocol, with the notable exception of structural engineering. We do not know why.

#### **FIRE PREVENTION LANGUAGE TAKEN FROM ENCINITAS & SEBASTOPOL SMALL CELL ORDINANCES**

The following language was offered to Staff, having been taken from ordinances previously passed in Sebastopol and Encinitas, California. Those cities' Small Cell Ordinances expanded on fire safety language beyond basic adherence to local fire codes. Susan Foster contributed to writing the fire safety portion of the Encinitas Small Cell Ordinance passed initially in 2019 and amended in 2020. The intent of this language was to meet the needs imposed upon each city by the proliferation of small cells and the proximity of these electrical devices for the first time so close to residences, schools, hospitals, playgrounds, daycare centers and parks. Malibu Staff removed this language from the drafts provided by the Community.

#### **APPLICATION AND REVIEW PROCEDURES**

Fire Department Review. After submittal by the applicant, the Director shall transmit the entire application packet to the Fire Prevention Division. The Fire Chief (or his or her designee) shall review the application for compliance with objective health and safety standards related to fire hazards. The Fire Chief shall inform the Director in writing of its conclusions and any recommended conditions for public health and safety. Review by the Fire Prevention Division may reasonably require additional processing time, including potentially exceeding FCC Shot Clock timelines if necessary. The Fire Chief (or his or her designee) may select and retain an independent consultant with expertise and/or specialized training in fire safety and fire hazard mitigation and prevention satisfactory to the Fire Chief in connection with any permit application. The Fire Chief may request independent consultant review on any matter committed to Fire Department review or approval. Subject to applicable law, in the event that the Fire Chief elects to retain an independent consultant in connection with any permit application, the applicant shall be responsible for the reasonable costs in connection with the services provided,

which may include without limitation any costs incurred by the independent consultant to attend and participate in any meetings or hearings. The same procedures for fee deposits, cost reimbursements and refunds to the applicant as described above shall be applicable to independent consultant review required by the Fire Chief.

## **CONDITIONS OF APPROVAL**

**Safety Hazard Protocols.** If the Fire Chief (or his or her designee) or Board of Chiefs of the Dispatch Joint Powers Authority finds good cause to believe that the facility (including, without limitation, its accessory equipment, antenna and/or base station) presents a fire risk, electrical hazard or other immediate threat to public health and safety in violation of any applicable law, such officials may order the facility to be shut down and powered off until such time as the fire risk or electrical hazard has been mitigated. Any mitigations required shall be at the permittee's sole cost and expense.

**Continued Monitoring.** The permittee's Registered Engineer shall certify in writing continued compliance with the safety standards of this policy on or before January 30th of each calendar year. The Fire Chief will continue to monitor the safety of wireless facilities in the City and publish a yearly review of fire safety considerations regarding potential risks posed by electrical components of new technologies, the presence of numerous small cell wireless facilities in the ROW and any fire events or near-miss events related to wireless facilities.

**Oversight Authority.** The Fire Chief, in his or her discretion, may issue written fire safety performance directives that shall apply to all existing permits within the scope of such directives and shall be considered as though incorporated into such permits. All permittees shall be required to comply with such directives at the permittee's sole cost and expense.

### **Fire Investigations.**

(i) The Fire Chief shall receive and investigate any credible fire safety complaint made by a resident of the City regarding a wireless facility in the City. Cost of such investigation shall be borne by the permittee. Permittees shall also inform the Fire Chief in writing within one business day of any fire or near-ignition event at any facility or replacement of any facility component in connection with any malfunction pertaining to excess heat, arcing or discharged current. (ii) The Fire Chief shall further investigate any fire in or around the vicinity of a small cell wireless facility. If the conclusion of the investigation is that any facility component is at fault, the Fire Chief shall immediately notify the Malibu City Council of his/her findings, and the facility at issue shall be de-energized until such time as the permittee provides assurances or undertakes precautions satisfactory to the Fire Chief that such event or similar event will not reoccur. In the event that no such assurance is received, and the Fire Chief has good cause to believe that such

failure to comply constitutes a threat to health or safety, permit revocation shall be initiated by the Director.

## **DESIGN STANDARDS**

Electric Meters. Small cells and other infrastructure deployments shall use flat-rate electric service or other method that obviates the need for a separate above-grade electric meter. If flat-rate service is not available, applicants may install a shrouded “smart meter” that shall not exceed the width of the pole provided that such smart meter shall be placed at least 10 feet above ground level. If the proposed project involves a ground-mounted equipment cabinet, an electric meter may be integrated with and recessed into the cabinet, but the Director shall not approve a separate ground-mounted electric meter pedestal unless (1) the separate ground-mounted meter pedestal would be placed off the sidewalk and (2) the applicant’s Registered Engineer demonstrates with clear and convincing evidence that all other alternatives for the electric meter are technically infeasible.

### **Fire Safety Standards.**

All wireless facilities shall include:

- 1) a power shut off readily accessible to fire service personnel, such as by means of rapid entry Knox or similar type systems installed as required by the Fire Chief, upon arrival at the scene of a fire and/or anticipated power surge due to power being turned off or on for any reason;
- (2) surge protection devices capable of mitigating a direct or partial direct lightning discharge;
- (3) surge protection devices capable of mitigating significant electrical disturbances that may enter the facility via conductive cables;
- (4) at least one-hour fire resistant interior surfaces to be used in the composition of all structures and
- (5) monitored automatic fire notification and extinguishing systems for all wireless facilities approved by the Fire Chief.

## **LEARN FROM PAST MISTAKES**

The 14 documents must be included because past failures to employ them caused mistakes that put people and their homes in harm’s way.

Four of the six tragedies below occurred in California. The California Public Utilities Commission (CPUC) has deferred to the utilities to have independent engineering review

performed. In other words, the utilities have been policing themselves. The utilities have been remiss in overall engineering design as demonstrated by the following:

- In 2007, the Malibu Canyon Fire started when three Southern California Edison power poles overloaded with wireless transceivers from Verizon, AT&T, Sprint (now T-Mobile) and NextG (now Crown Castle), in violation of state regulations, snapped in Santa Ana winds, igniting the tall grass at the base of the power poles. Southern California Edison (SCE) agreed to pay \$37 million. AT&T, Verizon and Sprint shared equal parts in a \$12 million fine. NextG was fined \$14.5 million. All five parties were accused by the CPUC of attempting to mislead fire investigators.
- In 2015, nearly 5000 PG&E smart meters exploded and caused over 80 fires when a transmission line contacted a distribution line, sending a surge through the city that exceeded the smart meters' capacity.
- In Canada and the US between 2012 and 2015, 17 utilities removed 790,000 Sensus smart meters as a safety precaution because of a fire hazard.
- In 2018, the Woolsey Fire was started by utility owned equipment, including a telecommunications wire, that led to the most destructive fire in Malibu in the last 100 years. It burned over 400 homes, killing two people in Malibu, and cost over \$6 billion.
- In June 2020, the head of PG&E pled guilty to 84 counts of manslaughter in the deaths of residents caused by the 2018 Camp Fire in Paradise, California. A nearly 100-year-old electrical transmission line owned and operated by PG&E was identified as the cause of the Camp Fire.
- In February 2021, the electric grid in Texas collapsed because electricity and natural gas providers had not winterized their equipment despite warnings 10 years earlier. Thousands of homes were damaged due to water leaks caused by freezing pipes, and so far, 69 deaths have been attributed to the energy grid collapse. Damages are estimated at \$18 billion.

We believe a higher level of professionalism and a coming together of multiple disciplines will enhance the chances for a less hazardous outcome as largely untested small cell technology exponentially increases within Malibu's city limits.

## **WIRELESS FIRES ARE ELECTRICAL FIRES & THEY DO HAPPEN**

Three fire officials, including Battalion Chief Drew Smith, recently stated they have not specifically fought 5G tower fires and claimed data is not available on 5G tower fires. It is early for data to be available on 5G cell tower fires and it is worth noting that no agency or industry in the United States, except those who have done so on a private basis, has kept track of cell tower fires from the installation of the first cell tower to the present. Yet proof of electrical fires in cell towers after the 1990s is available. This evidence has been collected in media reports and by some firefighters who have personal records and photographs; some have willingly shared that information. Additionally, we have obtained fire incident reports on cell tower fires around the country and confirmed arcing as a frequent heat source and "electrical" as a frequent cause.

Thanks to the pioneering work of retired Los Alamos Laboratory physicist Dr. David Stupin, we have a reasonable sense of how often cell tower fires were occurring up to the point where he

stopped keeping statistics in 2015. Dr. Stupin's research led him to believe that approximately one cell tower fire happens every month somewhere in the United States. The majority occurred because of electrical malfunction or because there was a deficiency of structural integrity and the collapse itself triggered a fire. We now face an exponential increase in small cell WCFs in the US. The CTIA is the telecommunications industry lobbying entity. They recently commissioned a study focusing on the increase in small cells in the United States. From the CTIA website:

"The Accenture analysis commissioned by CTIA also found that the United States will see a **550% rise in small cells by this year**, underscoring the timeliness of the FCC's action to jumpstart broadband investment. Small cell deployments will escalate rapidly from roughly 13,000 deployed in 2017 to over 800,000 cumulatively deployed by 2026, according to the analysis." [2018]

We urge you not to wait for the data on 5G cell tower fires before protecting Malibu from what we consider to be an inevitable increase in cell tower fire risks. If the industry has not been keeping track of cell tower fires during the last four generations of wireless, there is no foundation on which to place our hope that they will keep track of 5G cell tower fires. We choose to act with the knowledge of how electrical devices fail, and the fact there is nothing about small cells – the 5th generation of wireless that is being brought into our communities in greater numbers and in closer proximity to people – that can lead us to any conclusion other than the fact the risk of wireless fires in Malibu is increasing with the installation of every small cell.

From the December 16, 2020, Community Meeting, we feel the impression was left, based upon statements by fire officials, that 5G towers are not fire risks. Yet for fire officials of the Malibu section of the Los Angeles County Fire Department to state they have not fought 5G fires does not mean 5G tower fires do not exist. 5G WCFs *are* fire risks in the same way that 2G, 3G, 4G WCFs are fire risks. They are electrical devices. They will fail. Our goal is to put the WCFs through no more engineering rigor than would be required of the signage and electrical lighting in front of Malibu restaurants, gas stations and other commercial establishments in hopes of catching design flaws that could eventually result in fire. And if they do result in fire, we want the diagrams in place with the city of Malibu to show the First Responders the most pertinent information with respect to design features and chemicals involved so that our First Responders can respond as expeditiously and safely as possible.

## **FIRE RISKS WITH WIRELESS COMMUNICATION FACILITIES**

The 2015 Stockton, CA fires (multiple homes) were caused by smart meters used to measure electric use on the sides of homes. Smart/AMI meters may be deficient in suppressing transients/surges and the catastrophic failure of smart meters to handle a massive surge in the City of Stockton demonstrates that electronics close to the home, which many WCFs are and will be in the future, may pose a threat to life, health and property if not screened initially through our recommended Short Circuit and Coordination Study (SCCS). What happened in Stockton can happen in Malibu. If the utility pole on the corner of Malibu Canyon Road and Harbor Vista is hit by a car, and the transmission line contacts the distribution line, we could expect the electric meter and possibly the WCF to catastrophically fail. It would be necessary to de-energize the transmission line and thereby de-energize the area from City Hall and Cross Creek Road to

Pepperdine and beyond. Using the Coordination Study will make it clear what the appropriate fuse size should be. If the WCF is utilizing the appropriate fuse size, the fuse will instantly de-energize the circuit and prevent catastrophic failure.

For metered WCFs, SCE uses electronic meters that may have the same susceptibility as the meters in Stockton. Metered wireless facilities must go through the Community's electric fire safety protocol to determine if they have adequate surge protection against the type of fault that occurred in Stockton.

Lightning strikes can contain more energy than the electrical mishap that occurred in Stockton. California is experiencing more lightning strikes due to the evolving climate. Therefore, electrical installations in Malibu must mitigate the increased frequency of lightning.

The January 28, 2019, edition of The Los Angeles Times reported that [California utility equipment sparked more than 2,000 fires in over a three-year period](#). Cal Fire determined 17 of 21 California fires in 2018 were attributed to pole issues. The deadly [Campfire was confirmed to be started by power lines](#) and pole loading. In order to accommodate the newest wireless facilities, companies like Verizon are requiring an increase of pole height by 20-25% (adding 10-ft extension onto 40-ft or 50-ft pole) significantly lengthening the pole while decreasing the force of wind required to topple a pole.

No community outside Paradise, California has been more devastated by wildfire than Malibu. The overloading of three SCE utility poles by four different telecommunications carriers sparked the Malibu Canyon Fire in 2007 and in November 2018, a downed telecommunications lashing wire ignited the Woolsey Fire, forever scarring Malibu by taking out over 400 homes and costing over \$6 billion. With the exponential increase of WCFs and the administrative exemptions offered to telecom, our concern is that this problem will increase rather than decrease. Thus, electric fire safety protocol and structural site hardening are essential for Malibu.

## **EXAMPLES OF WCF FIRES**

There is a common misperception that WCF fires are primarily caused by arson. While there are documented cases of arson in 2020 related to misinformation about 5G and COVID-19, these cases were a short-term phenomenon. The examples below are representative of WCF fires that have occurred through the years as documented by the news media. Electrical malfunction and welding on WCFs for routine maintenance are the cause of the vast majority of cell tower fires. The examples below are representative of the genuine risks that could be facing Malibu.

**July 2013 – Besalem, Pennsylvania:** An AT&T cell tower fire was sparked when welders were working 70 feet in the air on a tower; sparks set off an intense fire ten feet above them. They tried to put it out but ended up having to race down to get help. The fire spread quickly and left the 10-story tower leaning over precariously. Initially, firefighters could not throw water on the fire because electricity was still surging through the tower and it took utility crews longer than expected to get it turned off. Essentially the fire was allowed to burn itself out.

**July 2014 – Columbus, Ohio:** Black smoke poured from a light pole with a WCF in Grandview Heights around 10:00 AM. The pole held lights for the football field as well as cell phone equipment. Streets were blocked off while emergency crews were on the scene. Homes within a one-block radius of the school were evacuated. Suspected electrical fire.

**September 2014 – Thurston, Oregon:** A cell tower fire at Thurston High School sent up a smoky plume above the Colts sport field. The cause of this fire was undetermined but Battalion Chief Marcus Lay explained, referring to the fire, that “It is contained and basically under control, but we have to wait until Springfield Utility Board gets here to get the power completely shut off to finish extinguishing it.” Cause undetermined.

**June 26, 2020 – Hanover, Virginia:** A cell tower caught on fire overnight; a heavy storm with lightning moved through the area shortly before the call. Hanover Fire was able to extinguish flames on top of a cell phone tower. When they arrived around 11:15 PM, they saw a cell tower completely covered in flames. The fire was safely put out and officials believe that it was an accidental fire as the result of electrical/mechanical issues.

**October 2020 – Irvine, California: Silverado Fire** Southern California Edison Co. may seek contributions from T-Mobile as it is suspected the company’s lashing wire touched an adjacent power line and sparked the fire. On October 26 SCE told the CPUC that a lashing wire attached to a telecommunications line running under the utility's 12-kV power line may have ignited the wildfire. The blaze seriously injured two firefighters and scorched more than 12,000 acres in Orange County and forced the evacuation of over 60,000 people, according to the California Department of Forestry and Fire Protection. In general, multiple companies can use the same utility poles, but each is responsible for managing its own equipment. Utilities are supposed to regularly look for any threats from telecom equipment installed on shared poles. This is not a foolproof system of governance.

**November 2020 – Lapeer, Michigan:** Wiring in a 197-foot-tall cell tower caught fire shortly after 9 p.m. Flames were visible shooting from the top of the hollow tower, while near the base of the structure the interior fire was so hot the metal glowed orange and pink. As a result of the fire that weakened the strength of the tower, there was a visible lean to the structure — the height of a 15-story building. The tower was dismantled and replaced.

**March 2021 – Chula Vista, California:** An AT&T cell tower partially concealed in a light fixture around a track at Otay Ranch High School burst into flames at 7:30 PM on a Tuesday evening. The Fire Incident Report was obtained through a public records request. The area of origin was within the equipment; the heat source was “electrical arcing”. When the fire department arrived the 100-ft pole appeared to have an internal fire that traveled up the pole to the cell phone equipment and stadium lighting at the top of the pole. The fire department requested utility SDG&E to respond to the location. Firefighters maintained a safe distance until they could verify all power supply to the pole had been secured. As they were waiting for the representative from SDG&E to arrive to confirm the power had been cut, the heat of the fire due to arcing caused the steel pole to become molten plasma. It collapsed onto the bleachers near the football field, burning the track and destroying the bleachers. Once the rep from SDG&E arrived on scene and verified the power had been secured and that there was no electrical hazard, firefighters extinguish the fire using a water and foam combination.

## WHY DOES 5G INFRASTRUCTURE POSE A GREATER FIRE RISK TO RESIDENTS

It is not the frequency of cell tower fires that concerns us the most. It is the severity of what a single cell tower fire can do. The biggest risk is that WCFs have been brought much closer to local populations and those installations are much more densely situated. Every electrical device including every WCF must be deenergized before a fire can be fought. On a good day that can happen in 10 minutes. Some cities find that it is 30 minutes or more before the electric company cuts the power. If the firefighters fight the fire before the tower is deenergized, they can be electrocuted. A lightning strike is a type of transient event that may lead to WCF catastrophic failure. Malibu residents will recall in May of 2019, just before Memorial Day weekend, several beaches were closed in Malibu because of a lightning storm that created unsafe conditions. **Thus, the placement of WCFs must allow time and space for escape because a fire originating in a WCF must not be fought by residents or by firefighters until SCE has turned off the power. This is why we propose separation and setback requirements as strategies to mitigate risk to residents.**

One firefighter who is accustomed to fighting fires under Santa Ana conditions in California understood the extreme risk posed by a cell tower fire near a populated area. He described how he would fight such a fire:

*“If the fire involves energized equipment, do not put water on it. Use water only to extinguish anything like trees, grass, vegetation, etc. that it may spread to, and then use water in short bursts if it's adjacent to the pole. Call the utility company immediately so they can de-energize. Keep people back for 2 spans in either direction and make sure all personnel and equipment stay out from under the power lines. Focus on public safety and exposure protection until it's confirmed that the power has been shut off.”*

We firmly believe the greater the distance between WCFs, the more likely an individual(s) would be able to escape homes, schools, hospitals, nursing homes. Distance between towers and from property lines will be critical to escape. Distance from WCFs and property lines may mean the difference between life and death. Due to the length of time it can take to cut the electricity and subsequently fight a fire, particularly one that has spread, we feel it is not worth the very real potential for loss of life if cell towers, small cells or macro towers, are located within residential neighborhoods. Additionally, care should be taken to keep cell towers away from roots of entrance and egress for neighborhoods. The same caution should be taken with densely populated facilities like schools, daycare centers and special zones as designated by the city.

The scars from the 2007 Malibu Canyon Fire and the 2018 Woolsey Fire are still evident on the land. The human toll appears greater. The residents speak openly about PTSD, particularly on those days when the winds blow as they did during the Malibu Canyon Fire and the Woolsey Fire. The winds remind residents of the Santa Anas that carried burning embers sideways, whipped flames such that they consumed many residents' homes, blocked exit routes out of the city and literally terrorized the whole of Malibu – the land, the air, and most of all the residents, their animals and wildlife.

**FALL ZONE:** We would like to add that we believe expansion of the fall zone should be carefully considered. It must be at least the height of the tower with 50% or at least 25% added onto that because of the falling debris field.

## **UNIQUE FIRE RISKS TO MALIBU**

**VERY HIGH FIRE HAZARD SEVERITY ZONE:** The City of Malibu is designated as a Very High Fire Hazard Severity Zone. The City was devastated by major fires in 2007 and 2018 due to power pole failures. In each instance the utility structures supported wireless communications facilities that either initiated or significantly contributed to the ignition. The 2018 Woolsey Fire consumed over 96,000 acres, destroyed at least 1,643 structures, killed three people, and prompted the evacuation of more than 295,000 people. It was one of several fires in California that ignited on the same day. Malibu has still not recovered. The 2007 fire burned 3,836 acres, 36 vehicles and 14 structures, including Castle Kashan and the Malibu Presbyterian Church, and damaged 19 other structures. It is essential that wireless communications facilities be engineered to prevent fire and withstand fire events as much as possible, and at least in a manner comparable to other commercial facilities with extensive, complicated electronics and wiring, as well as flammable, sometimes hazardous and toxic, materials on site.

**SEISMICALLY ACTIVE:** Malibu is geographically defined by the Santa Monica Mountains to the North, the Pacific Ocean to the South, the Santa Monica Fault to the East and Ventura County to the West. Malibu is a seismically active area with five active faults in the general vicinity. These nearby faults include Malibu Coast Fault, Las Flores Thrust Fault, Santa Monica Fault, Palos Verdes Hills Fault, and the Newport-Inglewood Fault. There are also potential seismic hazards and soil hazards in Malibu. Seismically-induced soil hazards include liquefaction – a temporary, but substantial loss of strength in granular solids, such as sand, silt, and gravel, usually occurring during or after a major earthquake. Seismic activity can also induce subsidence and settlement. Subsidence is deep settlement due to the withdrawal of fluid (oil, natural gas, or water). Seismically-induced settlement occurs in loose to medium dense unconsolidated soil above groundwater. These soils compress or settle with seismic shaking. Settlement can also result from human activities including improperly placed artificial fill, and/or structures built on bedrock or soil with differential settlement rates. There is also risk from expansive soils such as clay; it can swell when wetted and shrink when dried. Wetting can occur from rainfall, groundwater fluctuations, lawn watering, broken water or sewer lines. Expansive soils can result in cracks in foundations. Expansive soils located on slopes can cause slope failure. Unstable soils can produce landslides, debris flows, and rock falls. Hill slopes, which occur in Malibu, have a tendency to fail. Unless engineered properly, development in hillside areas tends to increase the potential for slope failure.

**MARINE ENVIRONMENT:** Malibu is a marine environment. Thus, there are accelerated corrosion issues due to the combination of increased moisture and salt in the air. Metal parts within wireless facilities fail faster in this corrosive environment. This corrosion may adversely affect the structural and electrical integrity of a wireless facility. In addition, corrosion may pose a risk to internal parts which, if corroded and not replaced on a very conservative maintenance schedule, may become fire risks themselves. Therefore, the failure rate of wireless facilities is higher and the need for stricter standards in the very beginning is essential.

**GREATER NEED FOR STRUCTURAL INTEGRITY:** Because of seismic and soil displacement and/or settlement risks as well as the potential for fires, heavy rains, mudslides and landslides, all wireless facility sites must be built to the standards of ANSI/APCO Public Safety Grade Site Hardening Requirements. This standard represents public safety requirements regarding various characteristics to make mission critical communications network sites sufficiently robust to meet the service availability requirements of public safety. These safety standards can be found in APCO ANSI 2.106.1–2019, or their replacements. Collapsed WCFs are a cause of multiple wireless facility fires. Structural integrity is paramount to keeping Malibu safe from fire started by collapsed wireless equipment.

This confluence of geographic and climate characteristics means that Malibu needs greater fire safety regulations than non-marine, low fire hazard, seismically stable regions. Malibu is the first local government to be informed that the exemption for telecom utilities render the National Electric Code, the California Electric Code, and the Los Angeles County Electrical Code insufficient to protect the public from the electrical risks of WCFs. Malibu can protect itself and its residents by adopting the safety provisions we propose.

## **WIRELESS CELLULAR FACILITIES AS CRITICAL INFRASTRUCTURE**

This final subsection recognizes that the Federal government and state public safety organizations have declared that wireless networks are critical infrastructure for national security and public safety purposes – often at the urging of the wireless industry. Critical infrastructure must be protected too, through appropriate fire and structural safety requirements. We are not aware of any evidence indicating telecom objects to a stronger electric safety protocol. If such an objection exists, it should be made on the record and the basis fully explained.

Cell towers are considered critical infrastructure to maintain communication during times of natural and man-made disasters. Pandemics are one example, as illustrated by the timing of the US Department of Homeland Security, Cybersecurity & Infrastructure Security Agency’s (CISA) March 28, 2020 Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and National Resilience in COVID-19 Response Version 3.0 (updated on April 17, 2020), available at [https://www.cisa.gov/sites/default/files/publications/Version\\_3.0\\_CISA\\_Guidance\\_on\\_Essential\\_Critical\\_Infrastructure\\_Workers\\_1.pdf](https://www.cisa.gov/sites/default/files/publications/Version_3.0_CISA_Guidance_on_Essential_Critical_Infrastructure_Workers_1.pdf). The Wireless Infrastructure Association applauded the designation. See <https://wia.org/wia-applauds-dhs-action-for-access-to-critical-infrastructure/>.

In Malibu, we are simply asking telecommunications carriers to treat their facilities like the essential infrastructure that it is. Anything less is counterintuitive and ill-advised.

Further, even before the DHS guidance the Association of Public-Safety Communications Officials (APCO) International received final approval from the American National Standards Institute (ANSI) in 2019 for an American National Standard (ANS) that identifies hardening requirements for public safety grade sites. In other words, structural engineering for WCF sites has gone from the concept practiced by some to a standard that should be followed by all.

APCO ANSI 2.106.1-2019 was developed by the Public Safety Grade Site Hardening Working Group. This standard was derived from the 2014 National Public Safety Telecommunications Council (NPSTC) report (Chapter 9) and the work of the original APCO Broadband Committee. The document is intended to assist public-safety communications network builders with the guidelines necessary to build hardened public safety grade networks.

With five (5) active earthquake faults running through Malibu, this is a welcome standard. It reads, in part:

This standard represents public safety requirements regarding various characteristics to make mission critical communications network sites sufficiently robust to meet the service availability requirements of public safety. In other words, what it takes to make network sites “public safety grade” or the extent to which they are “hardened.”

The document is intended to assist public safety communications network builders with the guidelines necessary to build hardened public safety grade networks. This document addresses hardening for wireless transmission and reception sites. Specifically, it addresses the hardening requirements to provide the appropriate site conditions and characteristics for wireless system electronics (e.g., transmitters and receivers) and wireless passive components (e.g., coaxial cables and antennas).

These sites need to withstand the onslaught of natural or manmade conditions and consider the distinct requirements for different geographic locations of the United States, including their likelihood to be subject to severe storms, earthquakes, tornadoes, and other disasters.

In the face of increasing federal emphasis on WCFs as essential to Public Safety and no record of opposition from the telecom industry, we question why anyone would be reluctant about embracing our safety protocol and application content requirements.

### **Application Requirements Regarding Fire Prevention and Management**

Los Angeles County requires:

(v) Electrical and Structural Safety Information. The following engineering documents prepared under the responsible charge of and sealed by a California licensed professional engineer must be included in the application:

- (A) A short circuit and coordination study (“SCCS”) calculated pursuant to the IEEE 551-2006: Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems or the latest version of that standard. The study must demonstrate the protection devices will ensure the equipment enclosure will not be breached. The SCCS must include analysis of Voltage Transient Surges due to contact of conductors of different voltages;
- (B) A one-line diagram of the electrical system;
- (C) Voltage Drop & Load Flow Study;
- (D) Load Calculation;
- (E) Panel Directories;
- (F) A plot plan showing the location of the mounting structure including address, or structure designation, or GPS location;
- (G) A plot plan showing the location of the service disconnecting means;
- (H) An elevation drawing of the equipment and the service disconnecting means;

(I) A demonstration there will be signage as required by the California Electric Code or the Los Angeles County Fire Department Chief or his or her designee;

(J) A demonstration the service disconnecting means shall be mounted at an elevation determined by the Los Angeles County Fire Chief

or his or her designee in conjunction the electric utility;

(K) A demonstration there will be instructions for deenergizing the equipment by First Responders.

(L) A list of toxic substances that may develop during arcing or fire that may impede fire suppression efforts;

(M) A list of hazards that may develop during arcing or fire that may impede fire suppression efforts;

(N) Structural Safety Information. The structural/civil engineering documents as recommended by a California licensed professional civil or structural engineer. The standard recommended by APCO/ANSI Public Safety Grade Site Hardening Requirements – APCO ANS 2.106.1-2019 is required by Federal law and the County of Los

Angeles. <https://www.apcointl.org/~documents/standard/21061-2019-psg-site-hardening/?layout=default>

### **Further Important Fire Considerations**

- The final diagrams submitted after approval and before construction and operation must contain enough detail for the building official and planning department to reaffirm safety compliance.
- The County of Los Angeles must impose on each permittee an ongoing duty to maintain safety compliance for so long as the facility is in operation.
- Cell towers must be set back from all entrances and exits to residential neighborhoods and schools as well as daycare centers because of the fire risk inherent in telecommunications equipment, including but not limited to the fact that cell towers invite lightning strikes. Even when proper lightning mitigation systems are installed, they cannot mitigate the effects of ground potential rise. Because telecommunications lines and electric lines are often bound together throughout neighborhoods and nearby buildings, the potential for insufficient mitigation of a lightning strike can trigger electrical fires within homes and other structures such as schools and daycare centers within 300 – 500 feet. Because cell tower fires are electrical fires, these fires cannot be fought through conventional means and therefore the power must be cut. Because this takes between 10 and 60 minutes, residents and children need time to escape.

## Alyson Stewart

---

**From:** rola masri <rolamasri@sbcglobal.net>  
**Sent:** Thursday, March 17, 2022 10:08 PM  
**To:** DRP Ordinance Studies; DRP Public Comment  
**Subject:** Statement For the Public Record - LA County Title 22 Wireless Facilities Ordinance  
**Attachments:** Public Comment Rev.pdf; 5G Free CA Gresser Comments re 2022-03-09 Topanga Meeting.pdf; Susan Foster and Tony Simmons White Paper-Update2-16-22.docx; Federal Expert Statement.docx; Imminent Hazard Petition.pdf; Encinitas Ordinance.pdf; CVTC-2019 5G letter.pdf; • Biggest online data breaches worldwide 2021 Statista.pdf; Cyberterrorism Tops List of 11 Potential Threats to U.S..pdf; Pew-Research-Center\_PI\_2019.11.15\_Privacy\_FINAL.pdf; 11 - Lawmakers blast federal agencies over 5G standoff TheHill.pdf; 12 - Havana Syndrome Victims to Receive Financial Support Under New Law - WSJ.pdf; 13 - Broadband Experience White Paper.191001.pdf; 14 - CI00187A\_FBA\_One Sheet\_Fiber vs Fixed Wireless Access\_WEB copy.pdf; 15 - IEEECommsMag2011 - FTTP Most Energy Efficient.pdf

**CAUTION:** External Email. Proceed Responsibly.

Dear Mr. Durbin,

No measures have been taken to protect the safety of the community or the liability of the county with these draft Wireless Facilities Ordinances. Please add the following attachments to the public record for the Planning Commission to review prior to the March 23, 2022 hearing on the LA County Title 22 Wireless Facilities Ordinance:

Attachment 1 - Summary of Issues facing LA County should the current Draft Ordinance be adopted.

Attachment 2 - Attorney Statement about the ordinance inconsistencies with Federal Law

Attachment 3 - Statement by a fire expert and engineer regarding fire risk and liability for wireless infrastructures.

Attachment 4 - Statement by our Federal experts about wireless emissions exposure safety issues and liability for the County.

Attachment 5 - This statement is backed by an Imminent Hazard Petition that was filed with Health and Human Services and the FDA in December 2021. See here and attached below: [https://ed84ae68-328e-42f4-847a-66fb863ac9df.filesusr.com/ugd/2cea04\\_db07f220b02245a88cc4e9e5561dad15.pdf](https://ed84ae68-328e-42f4-847a-66fb863ac9df.filesusr.com/ugd/2cea04_db07f220b02245a88cc4e9e5561dad15.pdf)

Attachment 6 - Encinitas Ordinance that we urge LA County to model Wireless Facilities ordinance after

Attachment 7 - CV Town Council Position Letter on wireless facilities from 2019

Additional 8 Attachments supporting my statement

Please let me know if you have any questions. Please let me know that you have received this email.

Rola Masri

Research Director  
California Brain Tumor Association  
[rolamasri@sbcglobal.net](mailto:rolamasri@sbcglobal.net)

Rola Masri  
Research Director  
California Brain Tumor Association  
[rolamasri@sbcglobal.net](mailto:rolamasri@sbcglobal.net)

Bruce Durbin  
Los Angeles County  
Department of Regional Planning  
[ordinance@planning.lacounty.gov](mailto:ordinance@planning.lacounty.gov)

March 17, 2022

Dear Mr. Durbin,

Please add the following statement and attachments to the public record:

1. We are asking that the Planning Commissioners vote down this draft ordinance and send it back to the Planning Department for major revision. We cite the following reasons:
  - a. The ordinance is incomplete as it stands now and presents significant potential financial liability to the County and potential threats to the health and welfare of County residents.
  - b. While the FCC currently has no safety standards for exposures to emissions from the infrastructure this ordinance promotes, the ordinance improperly cites non-existent federal safety and environmental standards as reasons for the County to move forward with this ordinance as it is now written. (See attached expert statement addressing the question, "If people are harmed who will be responsible?")
  - c. In cases where Federal safety standards are deemed inadequate, the Federal government is usually exempt from liability leaving local municipalities and businesses to battle it out in court. In cases where there is improper reliance on non-existent standards, it is likely that the liability will flow directly and only to the county.
  - d. The current draft ordinance does not require those in control of construction and operations of new wireless facilities to hold any insurance or bonds to indemnify the County for damages to persons, property or the environment. It has become commonplace in other municipalities who recognize these shortcomings and potential lines of liability to require indemnification within the ordinances.
  - e. In many places within the County, electric poles are located directly on residential properties in front yards, backyards and side yards. Also, the topography is such that the tops of electric poles can be at the same level as bedroom windows due to the hilly terrain. This ordinance has no setback requirements for residential neighborhoods which leaves our communities vulnerable to potentially high exposures to emissions from the wireless infrastructure.
  - f. There are also questions about whether or not the procedures followed by the Supervisors in promulgating this ordinance is in line with Due Process

requirements. (See attached statement from Julian Gresser, Esq. who presented these views at a hearing in another jurisdiction.) In summary, the Ordinance as it is now written concedes, abstractly, that all federal, state, and local laws will be observed. It is noteworthy that the Telecommunications Act of 1996 is not the only law relevant to our situation in Los Angeles County. The current draft Ordinance could be argued to conflict with the 1<sup>st</sup> and 5<sup>th</sup> Amendments of the U.S. Constitution, the Historic Preservation Act, the Endangered Species Act, the Americans with Disabilities Act, the Fair Housing Amendments Act, to name a few. None of these federal statutes are preempted by the 1996 Telecommunications Act. They are entitled to co-equal dignity and consideration.

- g. Fire Hazards Are Not Considered in the present draft of the ordinance (See attached statement from Susan Foster, an expert in this area.)

In summary, currently, telecommunications facilities are exempted from following normal Electric Code enforcement through implied variances that are not afforded any other structure or building and are thus treated as a special case but without a stated reason or rationale. This includes exemptions on Federal, State and the LA County Electric Code sections 80-3 and 80.6. It's noteworthy that Los Angeles County is a designated fire hazard zone. Wireless infrastructure facilities that are not closely monitored, inspected and controlled have been known to cause fires. Examples are the Malibu 2007 fire, the 2007 Guejito fire, the 2020 Silverado Fire near Irvine and many others in California and throughout the country. In the ordinance as now drafted, there are no protections for community residents or liability indemnification for the County in case of fires. Furthermore, having no safe setbacks from homes puts many residents at risk especially in high fire hazard communities. Cell tower fires are considered electric fires and cannot be put out until the electricity is turned off. This can take anywhere from 10 to 60 minutes to happen. Having these wireless facilities so close to homes makes it very difficult for residents to evacuate in time and risks both casualty and property loss. This can lead to massive liability for the county for not only not having proper set backs but also for not enforcing the electric codes that were meant to protect against such mishaps.
- h. Having a wireless network infrastructure makes communities and businesses extremely vulnerable to cyber and privacy attacks because it is so much easier to hack into wireless networks. According to recent data gathered by Statista in 2019, 1506 data breaches were reported in the US alone with an average cost of a single data breach being \$4 million. According to a Gallup Poll 71% of Americans worry about their personal information being stolen by computer hackers and 82% worry about cyberterrorism. According to a November 2019 Pew Research 28% of Americans have suffered a major identity theft problem in the previous 12 months. Wireless networks will only exacerbate this problem.
- i. The FAA states that wireless 5G signals can interfere with airplanes and helicopters safety equipment, especially altimeters. This further demonstrates how safety around this rollout is not being considered.
- j. HAVANA Syndrome – Government workers are already being compensated for injuries obtained from pulsed microwave radiation. Wireless technology also uses pulsed microwave radiation. The 6000 testimonials of people harmed by wireless

submitted to the FCC are telling us that people are already experiencing similar symptoms.

- k. Allowing this ordinance as it is drafted now, the County will experience great pushback from community members with each wireless facilities installation. A protective ordinance will ensure community buy-in and save the County a lot of headache.
- l. Moving forward with an ordinance that does not consider all these implications will be a breach of public trust.

This is not only a looming health and environmental crisis but an economic crisis as well. It would be irresponsible for government to continue promulgating and streamlining more wireless infrastructure knowing that residents and businesses are in no way being protected. Not their health, not their risk for disasters like fires or helicopters crashes, not their cybersecurity not their privacy, not their children's safety. Nothing is secure with this technology and this ordinance will continue to streamline it without adequate safety measures in place. We have to stop this now. County needs to take the lead and protect the community from all these imminent hazards that are looming.

- 2. We are asking that a working group be formed to rewrite this ordinance. I'm willing to donate my time and the expertise of my team to be a part of a working group with the planning department to make this ordinance one that protects the County's interests and reflects all stakeholder's needs. This working group can also include attorneys that have written a protective ordinance in other communities.
- 3. As an example of what other localities have done to address these concerns, Encinitas has implemented an ordinance that protects the community while abiding by Federal law. These are the points in the Encinitas ordinance that we found are very important and should be added to the LA County Wireless Facilities Ordinance:
  - a. The City..., nevertheless, retains "broad authority to determine, for purposes of the public health, safety, and welfare, the appropriate uses of land within a local jurisdiction's borders", *T-Mobile West LLC v. City & County of San Francisco*, 438 P.3d 1107 (Cal. 2019), including all zoning powers that are not specifically preempted by federal law, *T-Mobile S., LLC v. City of Roswell*, 574 U.S. 293 (2015).
  - b. This Policy is not intended to limit or prejudice any individual's ability to seek a reasonable accommodation under the Americans with Disabilities Act, the Fair Housing Act Amendments of 1988, or any other similar federal or state law due to electromagnetic sensitivity or symptoms based on exposure to radio frequency emissions.
  - c. Compliance with Health and Safety Regulations. All small wireless facilities and other infrastructure deployments shall be designed, constructed, operated and maintained in compliance with all generally applicable health and safety regulations, which includes without limitation all applicable regulations for human exposure to RF emissions and compliance with the federal Americans with Disabilities Act of 1990 (42 U.S.C. §§ 12101 et seq.), the Fair Housing Act

Amendments of 1988 and any other applicable disability/handicap accommodation laws.

- d. Insurance requirements, including:
  - i. Commercial General Liability
  - ii. Automotive Insurance for workers,
  - iii. Worker's compensation for injuries on the job site,
  - iv. Errors and Omissions Policy - designed to protect against acts, errors or omissions of the permittee
  - v. Environmental pollution insurance – including for radio frequency pollution
  - vi. Umbrella policy
  - vii. Endorsements – To ensure the County
  - viii. And other
  
- e. (a) Restricted Site Locations. All of the following locations will be deemed "Restricted Site Locations" that require an exception pursuant to Section 13 of this Policy: (1) any location within a residential zone;  
(2) any location within 500 feet from a residential dwelling unit;  
(3) any location within 500 feet from a daycare facility or school;  
(4) any location within a Very High Fire Hazard Severity Zone;  
(5) any location within the Ecological Resource/Open Space/Park Zone;  
(6) any location within 100 feet from the inland sand line or bluff line;  
(7) any location within 250 feet from any federal, state or local historic landmark;  
(8) any location with 100 feet from a Scenic Vista Point as designated in the Encinitas General Plan.
  
- f. (c) Encroachments Over Private Property. No small cell antennas, accessory equipment or other improvements may encroach onto or over any private or other property outside the public rights-of-way without the property owner's express written consent. Location Preferences, ordered from most preferred to least preferred, as follows:
  - i. (1) locations within industrial zones, commercial zones, business parks or office professional zones on or along prime arterials;
  - ii. (2) locations within industrial zones, commercial zones, business parks or office professional zones on or along major arterials;
  - iii. (3) locations within industrial zones, commercial zones, business parks or office professional zones on or along collector roads;
  - iv. (4) locations within industrial zones, commercial zones, business parks or office professional zones on or along local streets;
  - v. (5) any location within 1,000 feet from an existing/proposed small wireless facility;
  - vi. (6) any location not less than 500 feet from any Restricted Site Location (as defined in Section 10(a) above);
  - vii. (7) locations within residential zones on or along prime arterials;
  - viii. (8) locations within residential zones on or along major arterials;
  - ix. (9) locations within residential zones on or along collector roads;

- x. (10) locations within residential zones on or along local streets.
  - g. Public Notice should be mailed to affected individuals within a 500 ft radius of the transmitter siting.
  - h. Requires the fire Chief to:
    - i. assess fire hazard around wireless facilities
    - ii. Fire department to review for compliance with objective health and safety standards related to fire hazards
    - iii. If Fire Chief finds any part of the facility can cause a fire risk, electrical hazard or other immediate threat to public health and safety in violation of any applicable law, such officials may order the facility to be shut down and powered off until such time as the fire risk or electrical hazard has been mitigated. Any mitigations required shall be at the permittee's sole cost and expense.
    - iv. Fire Chief will continue to monitor the safety of wireless facilities in the City and publish a yearly review of fire safety considerations regarding potential risks posed by electrical components of new technologies, the presence of numerous small cell wireless facilities in the ROW and any fire events or near-miss events related to wireless facilities.
    - v. The city or its designee has the right to shut down, disable or remove any improvements or equipment in emergencies or when such improvements or equipment threatens actual, imminent harm to property or persons.
4. We are asking that the County prioritize Fiber Optics to the Premises rather than wireless infrastructure until the Health and safety issues have been worked out at the Federal level. This is in line with California state bill SB156 which promotes fiber as a future proof solution that provides greater speeds, reliability, safety and is currently considered an industry best practice.
- a. Performance – According to a study done by RVA LLC, Market Research and Consulting group which compared Fiber to the Home (FTTH), Cable, Wireless, DSL and Satellite technology for performance like average download and upload speeds, average latency and average reliability, Fiber to the Home scored 98% while wireless scored 38% for overall broadband experience. (See attached study) <https://www.eff.org/deeplinks/2020/06/why-slow-networks-really-cost-more-fiber>
  - b. Resiliency - <https://www.eff.org/deeplinks/2021/06/wide-diverse-coalition-agrees-what-congress-needs-do-about-our-broadband>
  - c. Cost of fiber is cheaper in the long run. Much easier to upgrade than small cells. Easier to maintain. A lot more energy efficient. The initial deployment cost for fiber is more expensive than Fixed Wireless (FWA) but the Total Cost of Ownership (TCO) demonstrates that fiber ends up being half the cost of FWA over time when you add up installation cost, yearly operation costs and 10 year replacement and operation cost. (See attached study)
  - d. Energy efficiency – when a comparison of energy consumption of DSL, HFC networks, passive optical networks, fiber to the node, point-to-point optical systems, UMTS (W-CDMA), and WiMAX it was found that Optical access networks are the most energy efficient of all the available access technologies. A

study published in IEEE Magazine found “Wireless technologies will continue to consume at least 10 times more power than wired technologies when providing comparable access rates and traffic volumes.” (See attached study)

For these reasons I ask that the Planning Commission vote down the two wireless facilities ordinances and send it back to an advisory group that involves the community and experts that will protect the County’s interests and the residents and not just the interests of the telecommunications industry.

Sincerely,

Rola Masri  
Research Director  
California Brain Tumor Association  
Contact: [rolamasri@sbcglobal.net](mailto:rolamasri@sbcglobal.net)

**Julian Gresser — Counsel to 5G Free California — Comments at Topanga  
City Council Town Meeting — Evening March 9, 2022**

.....

- Thank you for the opportunity to offer these brief Comments on the proposed Ordinance, amending Title 22 of Los Angeles Planning and Zoning Code.
- First, I concur with President Carriel Carrier that the scheduling of the proposed public hearing on March 23 of the Planning Commission, whose recommendations the Board of Supervisors (BOS) will give heavy weight, is way too hasty. In fact, impulsive action and a failure to set a proper legal, scientific, and environmental foundation for consideration of Title 22 are the hallmark of this ill-conceived Ordinance.
- In a nutshell, the Ordinance will effectively codify the present illegal practice of bypassing over 30 years of a well-established and balanced Conditional Use Permit Registration system with an accelerated Ministerial Site Review of small cell and macro cell antennas installed on private property. This *de facto* practice is currently being challenged in the Los Angeles Superior Court in the case of [\*Angela Sherick-Bright v. County of Los Angeles\*](#). The ostensible justification for this precipitous rush to Ordinance is the FCC’s shot clock deadlines that aim to accelerate densification of small cell and macro towers antennas emitting Radio Frequency/Electromagnetic Field (RF/EMF) radiation in high and dangerous concentrations within residential communities. The clear intention of the proposed Ministerial Site Review Application process, which will effectively replace Conditional Use Permits on new facilities, is to eliminate due process protections for the Los Angeles County community — namely, timely prior notification and an opportunity to be heard in public hearings, which are guaranteed by the First and Fifth Amendments of the U.S. Constitution and Article I, Section 7 of the California Constitution.
- Let us all agree that many local authorities recognize that protecting the public’s constitutional rights to due process, and the health and wellbeing of communities are an important responsibility and priority. However, many local city councils and Boards of Supervisors are laboring under the false impression that “their hands are tied,” because they are being told and believe that the Telecommunications Act of 1996 preempts them from taking local protective action. This appears to be an unstated premise behind

the proposed [amendment to Title 22](#). However, there are many important exceptions and qualifications to this overbroad blanket premise. You are being misled if you are told otherwise.

- I will summarize by the following questions the blatant legal deficiencies in the proposed Ordinance which also point to effective remedies. Most if not all the defects can be cured, if sufficient time is made available to consider them, soberly:
- **Question # 1:** By what legal authority and on what constitutional grounds can the BOS bypass and strip away due process protections of prior notification and public hearings?
  - **Response:** Nowhere in the Telecommunications Act of 1996 is there authority to bypass and to violate the U.S. Constitution or the California Constitution guarantees of due process. To apply the doctrine of preemption as the Board of Supervisors is considering would be to establish the FCC as a supra-constitutional agency. It is not. The shot clock is an excuse. The Los Angeles Planning Authority simply doesn't want to bother to take the time to ensure an opportunity for the public to participate in a meaningful way. The fundamental First Amendment right of the public to be heard was reaffirmed in footnote #6 of the recently decided case of *Children's Health Defense v. FCC*.<sup>1</sup>
- **Question # 2:** Where does it say in the 1996 Telecommunications Act that local communities can allow telecom purveyors to convert easements to property rights without just compensation to private property owners?
  - **Response:** The Telecommunications Act of 1996 contains no such provision. As vigorously argued in *Angela Sherick-Bright v. County of Los Angeles*, the practice is an unconstitutional taking, an inverse condemnation, in violation of the Fifth and Fourteenth Amendments.

---

<sup>1</sup> The Commission maintains that because local regulation of where these antennas are installed is preempted, there is no point in providing the local authorities or their citizens with notice of pending installations. But it does not follow that because citizens do not have a vote or a veto over the placement of an antenna on a neighbor's property, they are not entitled to know of the prospect. The First Amendment to the Constitution preserves the right of the people to petition the government for redress of grievances. See *Sorrell v. IMS Health Inc.*, 564 U.S. 552, 577 (2011) ("The First Amendment directs us to be especially skeptical of regulations that seek to keep people in the dark for what the government perceives to be their own good." (citation omitted)); *Am. Bus Ass'n v. Rogoff*, 649 F.3d 734, 738 (D.C.Cir. 2011) ("The right 'extends to [petitioning] all departments of the Government,' including administrative agencies and courts." (alteration in original) (quoting *Cal. Motor Transp. Co. v. Trucking Unlimited*, 404 U.S. 508, 510 (1972)); *Liberty Lobby, Inc. v. Pearson*, 390 F.2d 489, 491 (D.C. Cir. 1967) (Burger, J.) ("[E]very person or group engaged . . . in trying to persuade Congressional action is exercising the First Amendment right of petition."); 2 Joseph Story, *Commentaries on the Constitution* § 1894, at 619 (Thomas M. Cooley ed., 4th ed. 1873) (1833) (emphasizing the centrality of petitioning for redress of grievances in republican government).

- **Question # 3:** Has there been any determination, affirmative or negative, relating to the necessity of assessing the environmental impacts of this project through an EIS interagency consultative process under the California Environmental Quality Act (CEQA)? Has the BOS complied with its obligations under the federal National Environmental Policy Act (NEPA), including coordinating with other concerned federal agencies, recognizing that there is substantial federal involvement in Los Angeles County? (so-called NEPA “federal handle.”)
- **Response:** We can find no evidence of any official finding or determination pursuant to a formal due process compliant process to reach a decision on this question. Certainly, the BOS and the Planning Department have not prepared a Comprehensive Programmatic Environmental Impact Statement (EIS) as these statutes require for a series of actions that will transform Los Angeles County, as the proposed Ordinance will allow. There has been no formal finding of consistency with the environmental and health protections in the Regional, Coastal, Santa Monica Mountains, and other existing plans.
- **Fire Hazards:** Given its record of fire catastrophes, Los Angeles County is justifiably concerned with fire prevention and management. This area is well within the County’s authority, jurisdiction, and control. For example, what special protections does the Ordinance provide for fires resulting from combustion of terpenes in conifers? Scientific studies<sup>2</sup> document that continuous RF/EMF radiation exposure is closely tied with increased terpene production in conifers. Terpenes are a combustible organic compound. The Ordinance utterly ignores this risk which would need to be addressed in any CEQA/NEPA compliant EIS. There is no question that Los Angeles County has an absolute right to take reasonable protections for fire protection and management, which are certainly not preempted by the 1996 Telecommunications Act, and addressed in the present Los Angeles Fire Ordinance. Again, from the perspective of the First and Fifth Amendments noted above, is the Board of Supervisors seriously proposing to deny the public its right of timely notification and hearing before approving a program that will impose pervasive and intensifying fire risks?
- The contention that small cell and macro tower densification is essential for emergency response is bogus. As is well documented by the [Resolution of](#)

---

<sup>2</sup> E.g. see [“Influence of microwave frequency electromagnetic radiation on terpene emission and content in aromatic plants”](#)

[the International Association of Fire Fighters](#), there are far safer well-established alternatives to addressing major fire hazards than by amplifying them.

- **Question # 4:** What special dangers does the proposed amendments to Title 22 pose to public schools in Los Angeles County? How will the BOS reconcile and balance its statutory obligation to deliver safe learning environments for children and teachers in Los Angeles County? What special risks will RF/EMF radiation released from densifying small cell and macro towers around schools present to children, teachers, and staff?
  - **Response:** The scientific record is clear that children are especially vulnerable. The accelerated deployment of macro towers on school properties is today causing direct conflicts with school administrator's fiduciary responsibilities to deliver healthy and safe learning environments for children. (See: [www.techsafeschools.org](http://www.techsafeschools.org); [Environmental Health Trust - Children](#); [Tech Safe Schools Legal Advisory](#))
- **Question # 5:** What special dangers do the proposed amendments pose for airports in Los Angeles County? How can the BOS reconcile the serious conflicts with current FAA regulations?
  - **Response:** See: Complaint in *Angela Sherick-Bright v. County of Los Angeles*.
- **Question # 6:** The proposed amendment stipulates that it must comply with existing federal laws, which include: the Historic Preservation Act, the Endangered Species Act, the Americans with Disabilities Act, the Fair Housing Amendments Act, to name a few. None of these federal statutes are preempted by the 1996 Telecommunications Act. They are entitled to co-equal dignity and consideration. The BOS cannot override these federal statutes by some ministerial gimmick, simply because it doesn't want to take the time to devise a reasonable and balanced solution.
  - **Response:** The nationally protected, historic area of View Park is the focus in *Angela Sherick-Bright v. County of Los Angeles*. How many other protected areas exist in Los Angeles County? How many already disabled persons will be further impaired, and their fragile conditions jeopardized? What endangered species will be threatened? What will be the impact on economically challenged and minority communities within Los Angeles County? Federal laws prohibit the ministerial mayhem contemplated by this illegal Ordinance. These concerns cannot be

brushed aside by a provision buried in the Ordinance conceding, abstractly, that all federal, state, and local laws will be observed.

- **Question # 7:** What provision has been made for insurance for RF/EMF related harms? What consideration has been given to a bonding requirement, recognizing the hazards of RF/EMF radiation? What process is contemplated to coordinate with the Board of Health to report, investigate, and arrange for compensation of the thousands of victims of RF/EMF radiation exposure over the coming years? What provision is being made to deploy best available community wide radiation monitoring devices and methodologies, recognized by the National Spectrum Management Association, so that the Los Angeles County Health Department will even know the levels of RF/EMF radiation to which County communities are being exposed?
  - **Response:** None. No monitoring, no investigation, no compensation, no interest. It is called the “Public Pays Principle,” which the wireless providers are advocating must replace the well-established 1972 international OECD “Polluter Pays Principle.” For a note on the power of “mixed systems” of compensation and prevention, see [www.bbilan.org](http://www.bbilan.org))
- **Question # 8:** What potential liabilities will the BOS and Los Angeles County incur if Title 22 is passed without adequate consideration of the risks?
  - **Response:** The harms of proliferating and densifying small cell and macro towers in Los Angeles County are clear, foreseeable, measurable, and preventable. They are also uninsurable, because no reputable insurance company anywhere in the world will cover the risks of RF/EMF radiation harms. They are simply too great.
  - Under these conditions, at the very least the BOS has a fiduciary obligation to the community to address these risks, by inserting provisions in the Ordinance that require adequate insurance and indemnification and the posting of a substantial bond, which is a customary condition of other ultrahazardous activities.
- **Question # 9:** Why does the BOS not take the time to study carefully existing best ordinance practices, such as being implemented in Scarsdale, Malibu, Encinitas, and other local communities?
  - **Response:** Far preferable balanced alternatives consistent with the 1996 Telecommunications Act exist. The Planning Department and the BOS should study these templates and consider adopting them.

- The Planning Department and BOS are advised to take a bold and innovative additional step: that is seriously to consider providing incentives for a far superior broadband option: optical fiber to the premises (OFTP). Optical fiber broadband will accomplish the infrastructural goals of the proposed Ordinance, including bridging the Digital Divide, while optimizing the beneficial uses of wireless and minimizing its hazards. OFTP is faster, safer, private<sup>3</sup>, more cybersecure, lower latency, energy efficient, and climate change friendly. OFTP must be a serious option for consideration in the BOS' forthcoming NEPA/CEQA EIS. (See: Timothy Schoechle, [\*Reinventing Wires: The Future of Landlines and Networks\*](#))

**Conclusion:** Let us recognize that the present law and regulations pertaining to RF/EMF are in a state of flux. The FCC is claiming before the DC Circuit that the FDA, the principal health agency in the country, has adopted an Administrative Procedure Act (APA) compliant policy and regulations regarding RF/EMF safety and performance standards. But our legal team can find no evidence for these claims. Meanwhile, local communities like Los Angeles County are relying on these false claims and are placing their helpless populations under an Imminent Hazard. (See: [The Landmark FDA Case](#).)

The last thing one should do in chaos is to plunge more deeply. The precipitate haste by which Title 22 is being promoted provides a telltale clue to its overall character. President Carrier is wise in asking the BOS to pause and postpone; to think things through clearly and responsibly, especially given the long-term consequences; where necessary to consult with independent, uncompromised experts; to engage the public; and to prevent and correct an imminent folly. Los Angeles County and its Board of Supervisors will never regret taking the time at this critical juncture to discover the path of reasonable balance.

Thank you,

Julian Gresser, Counsel 5G Free California

---

<sup>3</sup> Accelerating densification of small cell and macro towers raises serious unexamined questions regarding the encroachment on privacy protected under the CA Consumer Privacy Act. Many of these problems may be avoided under an OFTP framework. See webinar: [Citizen Rights and Remedies Under the Shadow of 5G Surveillance and Behavioral Modification](#).

## **PROTECTING MALIBU’S FUTURE:**

### **PREVENTING ELECTRICAL FIRES IN CELL TOWERS BY INTRODUCING ENHANCED BUT GENERALLY ACCEPTED ENGINEERING DESIGN RIGOR AND ADEQUATE PROOF OF WORK IN THE APPLICATION**

**Susan Foster & Tony Simmons, P.E.**

**[Updated 2/16/2022; S. Foster]**

#### **INTRODUCTION**

The fire risk in Malibu is extreme. Wireless Communication Facility (WCF) proliferation increases the possibility of electrical fires. As such, electrical fire safety must be a priority for the City.

A group of Malibu residents (referred to here as the Community) have been attempting to work with the City to help minimize Malibu’s fire risk from WCF installations. This white paper explains the Community’s proposed safety design and application content requirements. These proposed requirements are tailored to Wireless Communications Facility installations in areas with dry vegetation, like Malibu. Some of the language was taken from ordinances in Encinitas and Sebastopol, while much of it is new. The new language is necessary because of the recent discovery that national, state and local electrical codes have expressed or implicit exemptions for “public utilities.” *See, e.g.,* California Electric Code Section 89.101.3.3(4) and (5) and “public utility” exclusion in Los Angeles County Electric Code Sections 80-3 and 80.6. There are similar exemptions in NFPA documents. Therefore, merely adopting the Electric Code, as Staff proposes, will do nothing. Malibu will have no electrical safety standards for WCFs unless our proposals are adopted.

There are generally accepted standards for most other buildings and structures, including installations that house extensive and complicated electronics with similar characteristics to those employed as part of a WCF. The Community’s proposed design standards incorporate those standards. In other words, we basically eliminated the “exception” so the general standards can apply. As a result, and consistent with FCC rules, Malibu will be enforcing “generally applicable building, structural, electrical, and safety codes and other laws codifying objective standards reasonably related to health and safety.” *In the Matter of Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies; Acceleration of Broadband Deployment: Expanding the Reach and Reducing the Cost of Broadband Deployment by Improving Policies Regarding Public Rights of Way and Wireless Facilities Siting; 2012 Biennial Review of Telecommunications Regulations*, 29 FCC Rcd 12865, 12945, ¶188 (2014).

Separately, the Community’s proposal sets out the information that must be contained in the application. The design is important, but it is equally crucial that applicants be required to show their work, provided in a way that allows for independent verification and analysis. Only then

can Malibu residents be assured that every possible step has been taken to minimize the risk of yet another wildfire caused or made worse by equipment breakdown in a WCF.

This paper provides specific and detailed explanations for the requirements we propose to help mitigate the profound fire risks in Malibu. It explains what we need by way of engineering up-front design and what is required for the telecommunications carrier to “show its work” in the permit application. Carriers will have their own professional engineers run their equipment through basic tests or produce standard design diagrams with an engineer’s seal. Those scrutinizing the application will be able to independently verify the work was indeed done by the appropriate qualified personnel. This design and application content rigor should catch most design flaws that could, if left undetected, put Malibu at greater risk for fire.

Malibu bears greater risk if telecom cuts corners in the engineering and design process. Our proposal requires just over a dozen documents in the Application, signed off on by a professional engineer employed by telecom. Those documents will be reviewed by Malibu’s permitting and enforcement departments and, if everything is in order, facilities will be approved for installation in the city. We are simply asking carriers to do due diligence and submit the right paperwork to the City when they apply. If they are going to come into Malibu, they must do so safely. It’s that simple.

We present examples below of failure to scrutinize electrical equipment and utilize professional engineers to help protect life, health and property. These examples will be familiar to every member of the Planning Commission and, we trust, will serve as a reminder to all of us that engineering rigor and proof of work applied early in the process will protect the City from potentially catastrophic failures later on.

We also provide several examples of the ways electrical fires can start in cell towers and why the new small cell infrastructure poses unique threats to Malibu. In addition, we demonstrate that setbacks and separation will accommodate telecommunications yet allow enough space and distance for residents to escape should an electrical fire still occur. Electrical fires cannot be extinguished by homeowners or even firefighters until power to the facility is cut by the utility. In some instances, de-energization of a cell tower has taken over 60 minutes. In such a circumstance, distance from residences, schools and other buildings may mean the difference between life and death.

Homeowners should never fight a cell tower fire even if it is directly in front of their home. To fight an electrical fire before the tower has been de-energized by the local utility (10 to 60 minutes) risks electrocution. Residents of Malibu must flee their homes in the event of an electrical fire and that is why distance between towers and setbacks from homes is critical.

Finally, we urge the Planning Commission and Staff to recognize that the federal government and public safety officials consider wireless infrastructure to be essential infrastructure. Therefore, any hesitation on the part of Staff to require our electric fire safety protocol may be allayed by appreciating that the infrastructure itself needs to be protected. Attempts by carriers to introduce slipshod and inferior design, materials and products in Malibu should be rejected.

We have been asked if our electric fire safety protocol is new and if electric fire safety requirements have been adopted by other cities. The answer is yes, and the answer is no. We know some cities are beginning to write into their small cell ordinances that electric codes should be adhered to because of the growing awareness of electrical fire risk in cell towers very close to homes and schools. As such, cities have attempted to require electric fire safety protocols. But it appears most cities have not discovered the “loophole” arising from the public utility exception that renders their efforts to protect their cities ineffective. As far as we can tell, Malibu will be the first to identify this problem and actually force an objective, generally applicable standard for electric fire safety.

Our proposed electric fire safety requirements are the result of in-depth collaboration between Tony Simmons, P.E., a professional engineer with decades of electric fire safety experience and Susan Foster, writer and an Honorary Firefighter with the San Diego Fire Department and a member of the 2001 Task Force in San Diego County that created the County’s first wireless ordinance. That ordinance survived a challenge all the way to the U.S. Supreme Court. Susan Foster has worked with rank-and-file firefighters in California and across the country over the last 20 years on the issue of RF radiation health and safety.

Mr. Simmons is a professional electrical engineer licensed by the States of California and Nevada. He is a recognized subject matter expert on electrical safety. As an employee of NV Energy, which served customers in California and Nevada, he was responsible for ensuring that no gap existed between the safety standards for customer-owned equipment and utility-owned equipment. Mr. Simmons designed a specialized test facility that integrated electrical equipment from East Asia, Europe, and the United States. This test site incorporated grounded and ungrounded electrical systems from all three regions and required Mr. Simmons to integrate standards from three regions to adhere to the technical requirements of the U.S. National Electric Code.

Residents and city planners in various California cities have contacted Susan Foster seeking assistance in their efforts to create safer WCF ordinances by taking electric fire safety into account. Additionally, Susan Foster has met with city councilmembers and engineering/IT personnel in several cities in Colorado, a state that also experienced an unprecedented fire threat in 2020 and more recently the December 2021 Marshall Fire which burned 6000 urban and suburban acres in six hours in Boulder County. Similarly, Tony Simmons’ expertise has been requested by several California cities regarding electric fire safety and engineering. Mr. Simmons and Susan Foster are working on electric fire safety amendments for three Colorado cities.

As it relates to Malibu, Susan Foster and Tony Simmons have worked over the past six months with attorney W. Scott McCollough, who has an extensive 37-year career in law and policy and was the Assistant Texas Attorney General responsible for utility matters, to arrive at our proposed electric fire safety requirements so as to minimize the chances of WCF electrical fires in Malibu. We did not know, until we pooled our collective knowledge and compared federal and state laws and local ordinances and regulations, that telecom was exempt from otherwise generally applicable codes and standards. We anticipate telecom is aware of the exception but chose to remain silent. This problem has now arrived at Malibu’s doorstep and must be solved.

We hope it will be resolved in favor of ensuring the safety of the city and its residents. News of this issue and problem is spreading, but Malibu has the opportunity – and responsibility – to lead the way, as it is known to do in matters of great importance.

## **WHY ELECTRICAL FIRE SAFETY?**

We propose fire safety requirements that consider Malibu's unique geographic location, its ongoing seismic activity, a marine climate conducive to expedited corrosion of WCF equipment, an abundance of dry brush, limited escape routes out of town, and year-round tourism which can swell the population by 4,000 visitors on any given weekend – adding to the burden on access/exit roads.

Fire risks in Malibu are not hypothetical conjecture. This city has burned twice just in the last 15 years. Over the last nine decades, at least 30 wildfires have destroyed parts of this coastal community, with the most recent Woolsey Fire (the largest in recorded history), consuming almost 100,000 acres. The ongoing, severe drought in California, along with record high temperatures, makes the focus on fire prevention more urgent than ever.

Preventing fires in Malibu has been a full-time job for Mayor Mikke Pierson since the beginning of his tenure on City Council. He was elected in 2018 two days before the Woolsey Fire broke out. Over 400 homes were lost with catastrophic impact on Malibu; many residents have still not made it through the permit stage for rebuilding. From a recent posting in Malibu's News Carousel:

*“Wildfire has always been Malibu's number-one public safety threat, but the size, duration and severity of the Woolsey Fire was unprecedented, and showed us the dangerous new normal of drought, climate change and California mega-fires,” said Mayor Mikke Pierson. “I am proud of the progress we have made in developing strategies to be even more prepared for disasters, including this siren system, which could be a powerful step toward community-wide preparedness.”*

The documents provided to the Planning Commission by Staff do not show sufficient commitment to treating fire as Malibu's number one public safety threat, as articulated by Mayor Pierson. Our plea, and that of the Community, is that the Planning Commission and City Council rectify this error. There must be strong and specific design, application content and inspection language in the Ordinance and Resolution. The whole point of applying electric engineering rigor is to make sure that when a device fails – and they all do at some point – it fails safely. Without this kind of rigor for WCFs, Malibu will expose itself to significant risk of yet another preventable fire.

We have therefore been detailed and specific about what is required to reduce the risk. We are not asking for anything that is not already required of every business in Malibu that wants to install parking lot lighting, a sign in front of their place of business, or install complicated electronics inside their building. Citizens have a right to demand engineering rigor for the projects coming into Malibu extremely close to people's homes, schools, daycare centers, parks, places of business, restaurants and in every facet of life.

Attachment 1 to Community Memo

We presently have no idea what the Planning Director will require in the applications. If application content is left entirely up to the Planning Director, the form can be changed at whim, especially after a personnel change. The application, however, is not just for Staff. The Planning Commission extensively relies on it, as does anyone participating in the application process. Unlike Staff and the Commission, public participants have no right or practical ability to require additional information beyond what is in the application. Their ability to reasonably participate and provide input is entirely dependent on the quantity and quality of the information in the application. The public needs and deserves more than the Staff materials provide.

The Community wants more rigorous requirements, particularly relating to up-front design by qualified and licensed personnel, and full disclosure in the application stage. In other words, we expect every application submitted to Malibu to have 14 documents indicating successful completion of a test, a diagram, a design schematic, and a list of any potentially hazardous substances, all signed and sealed by a licensed professional engineer. The Community's protocol was designed by an electrical engineer with decades of experience in applying engineering rigor to protect life, health and property. He knows what is needed for both design and proof of work. He knows what is feasible and reasonable.

To date, our fire safety proposals have been rejected by Staff/City Attorneys. We are particularly concerned that not only does our groundbreaking electric safety protocol get removed from every draft, but so does the fire safety wording we adopted from ordinances already passed by Encinitas and Sebastopol. That makes no sense for a city that has suffered two catastrophic fires in the last 15 years, and 30 over the last 90 years.

## **DESIGN AND PROOF OF WORK FOR THE APPLICATION**

Tony Simmons, P.E. has synthesized an electric fire safety protocol tailored to the specific needs of fire-prone Malibu. The engineering documents listed below in our 14-step electric fire safety protocol are required to demonstrate compliance with the generally applicable technical requirements of the following codes: the National Electric Code, the California Electric Code and the Los Angeles County Electric Code. Item (N) below indicates text pertaining to structural engineering requirements that, unlike the electrical safety portions, has been accepted and incorporated by Staff.

Each of the 14 steps below represents a document to be included in each WCF application. Each document must be sealed by a professional engineer pursuant to the California Professional Engineer's Act. Documents A through E are routinely produced by commercially available software such as E-TAP or POWER TOOLS. Documents F through H are produced with CAD programs such as AutoCAD. Document I is required by all codes. Document J is a reaffirmation that all parties understand the service entrance switch is not readily accessible. Documents K, L, and M include information all employers are required to provide to their workers. Document N has been accepted by Staff.

- (v) **Electrical and Structural Safety Information.** The following engineering documents prepared under the responsible charge of and sealed by a California licensed professional engineer must be included in the application:

- (A) A short circuit and coordination study (“SCCS”) calculated pursuant to the IEEE 551-2006: Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems or the latest version of that standard. The study must demonstrate the protection devices will ensure the equipment enclosure will not be breached. The SCCS must include analysis of Voltage Transient Surges due to contact of conductors of different voltages;

REASON FOR REQUIRING THIS DOCUMENT: This study is required to demonstrate the installation complies with NEC Articles 110.9, 110.10, 110.16 and 240.

WHY THIS STUDY IS IMPORTANT: All electrical equipment will fail. This study ensures that electrical equipment will not catastrophically fail. As an example, electrical conductors may rub together and damage the insulation, allowing excessive current to flow. This study ensures that the fuse or circuit breaker de-energizes the circuit fast enough to prevent arcing or fire. This study could have identified beforehand that meters would catastrophically fail in Stockton in 2015. This study can ensure that a WCF mounted on poles with transmission and distribution circuits, like the pole on the corner of Malibu Canyon Road and Harbor Vista, does not fail like electric meters did in Stockton in 2015.

- (B) A one-line diagram of the electrical system;

REASON FOR REQUIRING THIS DOCUMENT: This diagram provides a map of the electrical installation and serves as the primary reference for all the other documents.

WHY THIS DIAGRAM IS IMPORTANT: This document allows less experienced electrical workers to quickly trouble shoot electrical malfunctions and failures and to identify a de-energization point.

- (C) Voltage Drop & Load Flow Study;

REASON FOR REQUIRING THIS DOCUMENT: This Study proves the electrical conductors are large enough to ensure that equipment supplied by the electricity flowing through conductors operate within the design range for that item of equipment.

WHY THIS STUDY IS IMPORTANT: If the voltage is too low or too high, electrical equipment may not operate correctly or be damaged.

- (D) Load Calculation;

REASON FOR REQUIRING THIS DOCUMENT: The load calculation ensures each item of equipment is sized to safely carry the design load.

WHY THIS DOCUMENT IS IMPORTANT: This document lists all load connected to the electrical system.

(E) Panel Directories;

REASON FOR REQUIRING THIS DOCUMENT: Panel Directories are provided to show workers which switch or breaker de-energizes a specific circuit or piece of equipment.

WHY THIS DOCUMENT IS IMPORTANT: The panel directory is required by Electric Codes so that electrical workers or less experienced individuals can quickly de-energize a circuit in an emergency without a “trial and error” approach.

(F) A plot plan showing the location of the mounting structure including address, or structure designation, or GPS location;

REASON FOR REQUIRING THIS DOCUMENT: This document is necessary to quickly identify the location for prompt emergency and non-emergency response.

WHY THIS DOCUMENT IS IMPORTANT: This document shows the exact location of the WCF and the access route. Power poles are commonly assigned addresses that may be located several hundred feet from the actual location.

(G) A plot plan showing the location of the service disconnecting means;

REASON FOR REQUIRING THIS DOCUMENT: This document is necessary to demonstrate the location of the switch or circuit breaker that separates the customer electrical system from the utility electrical system. This is commonly called the “main switch” or the “main circuit breaker”.

WHY THIS DOCUMENT IS IMPORTANT: A WCF has been proposed on a streetlight pole on Cross Creek Road. The WCF is powered from one electric service. The streetlight is powered from a separate electric service. In order to suppress a fire, the power to the streetlight and the power to the WCF must both be de-energized. This plan shows both de-energization points. Service disconnects for streetlights may be several hundred feet away on a different street.

- (H) An elevation drawing of the equipment and the service disconnecting means;

REASON FOR REQUIRING THIS DOCUMENT: This drawing shows how the equipment will look once installed. It is critical to ensure the workspace has adequate room to operate safely.

WHY THIS DOCUMENT IS IMPORTANT: Performing work on electrical equipment is hazardous. Workers are entitled to sufficient room to safely work and to escape if an arc develops.

- (I) A demonstration there will be signage as required by the California Electric Code or the Los Angeles County Fire Department Chief or his or her designee;

REASON FOR REQUIRING THIS DOCUMENT: The CEC requires that electric equipment be labeled.

WHY THIS DOCUMENT IS IMPORTANT: This is necessary to ensure that first responders or electrical workers safely de-energize the correct equipment.

- (J) A demonstration the service disconnecting means shall be mounted at an elevation determined by the Los Angeles County Fire Chief or his or her designee in conjunction with the electric utility;

REASON FOR REQUIRING THIS DOCUMENT: The CEC specifies that the service disconnecting means be readily accessible, which generally means operable without a ladder. To prevent vandalism of communication systems in public right of ways, the service disconnecting means may be mounted out of reach from the ground.

WHY THIS DOCUMENT IS IMPORTANT: To prevent casual vandalism, the service disconnect may be mounted at a height not reachable from ground level.

- (K) A demonstration there will be instructions for deenergizing the equipment by First Responders.

REASON FOR REQUIRING THIS DOCUMENT: Certain electric equipment must be de-energized in a specific sequence to ensure safety.

WHY THIS DOCUMENT IS IMPORTANT: Certain electrical equipment can create an additional hazard if de-energized in the incorrect sequences.

- (L) A list of toxic substances that may develop during arcing or fire that may impede fire suppression efforts;

REASON FOR REQUIRING THIS DOCUMENT: The intense heat of an electrical arc may turn non-hazardous substances into hazardous substances. Special protective equipment may be required.

WHY THIS DOCUMENT IS IMPORTANT: Electric arcs instantly reach temperatures of thousands of degrees. Normally non-hazardous material may become hazards. Metals may vaporize and damage lungs.

- (M) A list of hazards that may develop during arcing or fire that may impede fire suppression efforts;

REASON FOR REQUIRING THIS DOCUMENT: Arcing or fire may create a pressure wave that can imperil life, health and property.

WHY THIS DOCUMENT IS IMPORTANT: Electric arcing can vaporize copper or aluminum. Copper expands 67,000 times when converted from solid to vapor, which can cause an air blast that throws an individual several feet with fatal force.

- (N) Structural Safety Information. The structural/civil engineering documents as recommended by a California licensed professional civil or structural engineer employed by Center for Municipal Solutions.

NOTE: The proposed ordinance includes a standard recommended by APCO/ANSI. This issue has been adequately addressed in the documents provided by Staff.

Every draft we provided to Staff included the 14 documents listed above. As stated, each step represents a diagram, design schematic, or list of potentially hazardous substances that must be signed off on by a professional engineer as required in our fire safety and structural engineering protocol. Staff has persistently removed the protocol, with the notable exception of structural engineering. We do not know why.

## **FIRE PREVENTION LANGUAGE TAKEN FROM ENCINITAS & SEBASTOPOL SMALL CELL ORDINANCES**

The following language was offered to Staff, having been taken from ordinances previously passed in Sebastopol and Encinitas, California. Those cities' Small Cell Ordinances expanded on fire safety language beyond basic adherence to local fire codes. Susan Foster contributed to writing the fire safety portion of the Encinitas Small Cell Ordinance passed initially in 2019 and amended in 2020. The intent of this language was to meet the needs imposed upon each city by the proliferation of small cells and the proximity of these electrical devices for the first time so close to residences, schools, hospitals, playgrounds, daycare centers and parks. Malibu Staff removed this language from the drafts provided by the Community.

## **APPLICATION AND REVIEW PROCEDURES**

Fire Department Review. After submittal by the applicant, the Director shall transmit the entire application packet to the Fire Prevention Division. The Fire Chief (or his or her designee) shall review the application for compliance with objective health and safety standards related to fire hazards. The Fire Chief shall inform the Director in writing of its conclusions and any recommended conditions for public health and safety. Review by the Fire Prevention Division may reasonably require additional processing time, including potentially exceeding FCC Shot Clock timelines if necessary. The Fire Chief (or his or her designee) may select and retain an independent consultant with expertise and/or specialized training in fire safety and fire hazard mitigation and prevention satisfactory to the Fire Chief in connection with any permit application. The Fire Chief may request independent consultant review on any matter committed to Fire Department review or approval. Subject to applicable law, in the event that the Fire Chief elects to retain an independent consultant in connection with any permit application, the applicant shall be responsible for the reasonable costs in connection with the services provided, which may include without limitation any costs incurred by the independent consultant to attend and participate in any meetings or hearings. The same procedures for fee deposits, cost reimbursements and refunds to the applicant as described above shall be applicable to independent consultant review required by the Fire Chief.

## **CONDITIONS OF APPROVAL**

**Safety Hazard Protocols.** If the Fire Chief (or his or her designee) or Board of Chiefs of the Dispatch Joint Powers Authority finds good cause to believe that the facility (including, without limitation, its accessory equipment, antenna and/or base station) presents a fire risk, electrical hazard or other immediate threat to public health and safety in violation of any applicable law, such officials may order the facility to be shut down and powered off until such time as the fire risk or electrical hazard has been mitigated. Any mitigations required shall be at the permittee's sole cost and expense.

**Continued Monitoring.** The permittee's Registered Engineer shall certify in writing continued compliance with the safety standards of this policy on or before January 30th of each calendar year. The Fire Chief will continue to monitor the safety of wireless facilities in the City and publish a yearly review of fire safety considerations regarding potential risks posed by electrical components of new technologies, the presence of numerous small cell wireless facilities in the ROW and any fire events or near-miss events related to wireless facilities.

**Oversight Authority.** The Fire Chief, in his or her discretion, may issue written fire safety performance directives that shall apply to all existing permits within the scope of such directives and shall be considered as though incorporated into such permits. All permittees shall be required to comply with such directives at the permittee's sole cost and expense.

### **Fire Investigations.**

(i) The Fire Chief shall receive and investigate any credible fire safety complaint made by a resident of the City regarding a wireless facility in the City. Cost of such investigation shall be borne by the permittee. Permittees shall also inform the Fire Chief in writing within one business day of any fire or near-ignition event at any facility or replacement of any facility component in connection with any malfunction pertaining to excess heat, arcing or discharged current. (ii) The Fire Chief shall further investigate any fire in or around the vicinity of a small cell wireless facility. If the conclusion of the investigation is that any facility component is at fault, the Fire Chief shall immediately notify the Malibu City Council of his/her findings, and the facility at issue shall be de-energized until such time as the permittee provides assurances or undertakes precautions satisfactory to the Fire Chief that such event or similar event will not reoccur. In the event that no such assurance is received, and the Fire Chief has good cause to believe that such failure to comply constitutes a threat to health or safety, permit revocation shall be initiated by the Director.

## **DESIGN STANDARDS**

Electric Meters. Small cells and other infrastructure deployments shall use flat-rate electric service or other method that obviates the need for a separate above-grade electric meter. If flat-rate service is not available, applicants may install a shrouded "smart meter" that shall not exceed the width of the pole provided that such smart meter shall be placed at least 10 feet above ground level. If the proposed project involves a ground-mounted equipment cabinet, an electric meter may be integrated with and recessed into the cabinet, but the Director shall not approve a separate ground-mounted electric meter pedestal unless (1) the separate ground-mounted meter pedestal would be placed off the

sidewalk and (2) the applicant's Registered Engineer demonstrates with clear and convincing evidence that all other alternatives for the electric meter are technically infeasible.

### **Fire Safety Standards.**

All wireless facilities shall include:

- 1) a power shut off readily accessible to fire service personnel, such as by means of rapid entry Knox or similar type systems installed as required by the Fire Chief, upon arrival at the scene of a fire and/or anticipated power surge due to power being turned off or on for any reason;
- (2) surge protection devices capable of mitigating a direct or partial direct lightning discharge;
- (3) surge protection devices capable of mitigating significant electrical disturbances that may enter the facility via conductive cables;
- (4) at least one-hour fire resistant interior surfaces to be used in the composition of all structures and
- (5) monitored automatic fire notification and extinguishing systems for all wireless facilities approved by the Fire Chief.

### **LEARN FROM PAST MISTAKES**

The 14 documents must be included because past failures to employ them caused mistakes that put people and their homes in harm's way.

Four of the six tragedies below occurred in California. The California Public Utilities Commission (CPUC) has deferred to the utilities to have independent engineering review performed. In other words, the utilities have been policing themselves. The utilities have been remiss in overall engineering design as demonstrated by the following:

- In 2007, the Malibu Canyon Fire started when three Southern California Edison power poles overloaded with wireless transceivers from Verizon, AT&T, Sprint (now T-Mobile) and NextG (now Crown Castle), in violation of state regulations, snapped in Santa Ana winds, igniting the tall grass at the base of the power poles. Southern California Edison (SCE) agreed to pay \$37 million. AT&T, Verizon and Sprint shared equal parts in a \$12 million fine. NextG was fined \$14.5 million. All five parties were accused by the CPUC of attempting to mislead fire investigators.

- In 2015, nearly 5000 PG&E smart meters exploded and caused over 80 fires when a transmission line contacted a distribution line, sending a surge through the city that exceeded the smart meters' capacity.
- In Canada and the US between 2012 and 2015, 17 utilities removed 790,000 Sensus smart meters as a safety precaution because of a fire hazard.
- In 2018, the Woolsey Fire was started by utility owned equipment, including a telecommunications wire, that led to the most destructive fire in Malibu in the last 100 years. It burned over 400 homes, killing two people in Malibu, and cost over \$6 billion.
- In June 2020, the head of PG&E pled guilty to 84 counts of manslaughter in the deaths of residents caused by the 2018 Camp Fire in Paradise, California. A nearly 100-year-old electrical transmission line owned and operated by PG&E was identified as the cause of the Camp Fire.
- In February 2021, the electric grid in Texas collapsed because electricity and natural gas providers had not winterized their equipment despite warnings 10 years earlier. Thousands of homes were damaged due to water leaks caused by freezing pipes, and so far, 69 deaths have been attributed to the energy grid collapse. Damages are estimated at \$18 billion.

We believe a higher level of professionalism and a coming together of multiple disciplines will enhance the chances for a less hazardous outcome as largely untested small cell technology exponentially increases within Malibu's city limits.

## **WIRELESS FIRES ARE ELECTRICAL FIRES & THEY DO HAPPEN**

Three fire officials, including Battalion Chief Drew Smith, recently stated they have not specifically fought 5G tower fires and claimed data is not available on 5G tower fires. It is early for data to be available on 5G cell tower fires and it is worth noting that no agency or industry in the United States, except those who have done so on a private basis, has kept track of cell tower fires from the installation of the first cell tower to the present. Yet proof of electrical fires in cell towers after the 1990s is available. This evidence has been collected in media reports and by some firefighters who have personal records and photographs; some have willingly shared that information. Additionally, we have obtained fire incident reports on cell tower fires around the country and confirmed arcing as a frequent heat source and "electrical" as a frequent cause.

Thanks to the pioneering work of retired Los Alamos Laboratory physicist Dr. David Stupin, we have a reasonable sense of how often cell tower fires were occurring up to the point where he stopped keeping statistics in 2015. Dr. Stupin's research led him to believe that approximately one cell tower fire happens every month somewhere in the United States. The majority occurred because of electrical malfunction or because there was a deficiency of structural integrity and the collapse itself triggered a fire. We now face an exponential increase in small cell WCFs in the US. The CTIA is the telecommunications industry lobbying entity. They recently commissioned a study focusing on the increase in small cells in the United States. From the CTIA website:

"The Accenture analysis commissioned by CTIA also found that the United States will see a **550% rise in small cells by this year**, underscoring the timeliness of the FCC's action to jumpstart broadband investment. Small cell deployments will escalate rapidly

from roughly 13,000 deployed in 2017 to over 800,000 cumulatively deployed by 2026, according to the analysis." [2018]

We urge you not to wait for the data on 5G cell tower fires before protecting Malibu from what we consider to be an inevitable increase in cell tower fire risks. If the industry has not been keeping track of cell tower fires during the last four generations of wireless, there is no foundation on which to place our hope that they will keep track of 5G cell tower fires. We choose to act with the knowledge of how electrical devices fail, and the fact there is nothing about small cells – the 5th generation of wireless that is being brought into our communities in greater numbers and in closer proximity to people – that can lead us to any conclusion other than the fact the risk of wireless fires in Malibu is increasing with the installation of every small cell.

From the December 16, 2020, Community Meeting, we feel the impression was left, based upon statements by fire officials, that 5G towers are not fire risks. Yet for fire officials of the Malibu section of the Los Angeles County Fire Department to state they have not fought 5G fires does not mean 5G tower fires do not exist. 5G WCFs *are* fire risks in the same way that 2G, 3G, 4G WCFs are fire risks. They are electrical devices. They will fail. Our goal is to put the WCFs through no more engineering rigor than would be required of the signage and electrical lighting in front of Malibu restaurants, gas stations and other commercial establishments in hopes of catching design flaws that could eventually result in fire. And if they do result in fire, we want the diagrams in place with the city of Malibu to show the First Responders the most pertinent information with respect to design features and chemicals involved so that our First Responders can respond as expeditiously and safely as possible.

## **FIRE RISKS WITH WIRELESS COMMUNICATION FACILITIES**

The 2015 Stockton, CA fires (multiple homes) were caused by smart meters used to measure electric use on the sides of homes. Smart/AMI meters may be deficient in suppressing transients/surges and the catastrophic failure of smart meters to handle a massive surge in the City of Stockton demonstrates that electronics close to the home, which many WCFs are and will be in the future, may pose a threat to life, health and property if not screened initially through our recommended Short Circuit and Coordination Study (SCCS). What happened in Stockton can happen in Malibu. If the utility pole on the corner of Malibu Canyon Road and Harbor Vista is hit by a car, and the transmission line contacts the distribution line, we could expect the electric meter and possibly the WCF to catastrophically fail. It would be necessary to de-energize the transmission line and thereby de-energize the area from City Hall and Cross Creek Road to Pepperdine and beyond. Using the Coordination Study will make it clear what the appropriate fuse size should be. If the WCF is utilizing the appropriate fuse size, the fuse will instantly de-energize the circuit and prevent catastrophic failure.

For metered WCFs, SCE uses electronic meters that may have the same susceptibility as the meters in Stockton. Metered wireless facilities must go through the Community's electric fire safety protocol to determine if they have adequate surge protection against the type of fault that occurred in Stockton.

Lightning strikes can contain more energy than the electrical mishap that occurred in Stockton. California is experiencing more lightning strikes due to the evolving climate. Therefore, electrical installations in Malibu must mitigate the increased frequency of lightning.

The January 28, 2019, edition of The Los Angeles Times reported that [California utility equipment sparked more than 2,000 fires in over a three-year period](#). Cal Fire determined 17 of 21 California fires in 2018 were attributed to pole issues. The deadly [Campfire was confirmed to be started by power lines](#) and pole loading. In order to accommodate the newest wireless facilities, companies like Verizon are requiring an increase of pole height by 20-25% (adding 10-ft extension onto 40-ft or 50-ft pole) significantly lengthening the pole while decreasing the force of wind required to topple a pole.

No community outside Paradise, California has been more devastated by wildfire than Malibu. The overloading of three SCE utility poles by four different telecommunications carriers sparked the Malibu Canyon Fire in 2007 and in November 2018, a downed telecommunications lashing wire ignited the Woolsey Fire, forever scarring Malibu by taking out over 400 homes and costing over \$6 billion. With the exponential increase of WCFs and the administrative exemptions offered to telecom, our concern is that this problem will increase rather than decrease. Thus, electric fire safety protocol and structural site hardening are essential for Malibu.

## **EXAMPLES OF WCF FIRES**

There is a common misperception that WCF fires are primarily caused by arson. While there are documented cases of arson in 2020 related to misinformation about 5G and COVID-19, these cases were a short-term phenomenon. The examples below are representative of WCF fires that have occurred through the years as documented by the news media. Electrical malfunction and welding on WCFs for routine maintenance are the cause of the vast majority of cell tower fires. The examples below are representative of the genuine risks that could be facing Malibu.

**July 2013 – Besalem, Pennsylvania:** An AT&T cell tower fire was sparked when welders were working 70 feet in the air on a tower; sparks set off an intense fire ten feet above them. They tried to put it out but ended up having to race down to get help. The fire spread quickly and left the 10-story tower leaning over precariously. Initially, firefighters could not throw water on the fire because electricity was still surging through the tower and it took utility crews longer than expected to get it turned off. Essentially the fire was allowed to burn itself out.

**July 2014 – Columbus, Ohio:** Black smoke poured from a light pole with a WCF in Grandview Heights around 10:00 AM. The pole held lights for the football field as well as cell phone equipment. Streets were blocked off while emergency crews were on the scene. Homes within a one-block radius of the school were evacuated. Suspected electrical fire.

**September 2014 – Thurston, Oregon:** A cell tower fire at Thurston High School sent up a smoky plume above the Colts sport field. The cause of this fire was undetermined but Battalion Chief Marcus Lay explained, referring to the fire, that “It is contained and basically

under control, but we have to wait until Springfield Utility Board gets here to get the power completely shut off to finish extinguishing it.” Cause undetermined.

**June 26, 2020 – Hanover, Virginia:** A cell tower caught on fire overnight; a heavy storm with lightning moved through the area shortly before the call. Hanover Fire was able to extinguish flames on top of a cell phone tower. When they arrived around 11:15 PM, they saw a cell tower completely covered in flames. The fire was safely put out and officials believe that it was an accidental fire as the result of electrical/mechanical issues.

**October 2020 – Irvine, California: Silverado Fire** Southern California Edison Co. may seek contributions from T-Mobile as it is suspected the company’s lashing wire touched an adjacent power line and sparked the fire. On October 26 SCE told the CPUC that a lashing wire attached to a telecommunications line running under the utility's 12-kV power line may have ignited the wildfire. The blaze seriously injured two firefighters and scorched more than 12,000 acres in Orange County and forced the evacuation of over 60,000 people, according to the California Department of Forestry and Fire Protection. In general, multiple companies can use the same utility poles, but each is responsible for managing its own equipment. Utilities are supposed to regularly look for any threats from telecom equipment installed on shared poles. This is not a foolproof system of governance.

**November 2020 – Lapeer, Michigan:** Wiring in a 197-foot-tall cell tower caught fire shortly after 9 p.m. Flames were visible shooting from the top of the hollow tower, while near the base of the structure the interior fire was so hot the metal glowed orange and pink. As a result of the fire that weakened the strength of the tower, there was a visible lean to the structure — the height of a 15-story building. The tower was dismantled and replaced.

**March 2021 – Chula Vista, California:** An AT&T cell tower partially concealed in a light fixture around a track at Otay Ranch High School burst into flames at 7:30 PM on a Tuesday evening. The Fire Incident Report was obtained through a public records request. The area of origin was within the equipment; the heat source was “electrical arcing”. When the fire department arrived the 100-ft pole appeared to have an internal fire that traveled up the pole to the cell phone equipment and stadium lighting at the top of the pole. The fire department requested utility SDG&E to respond to the location. Firefighters maintained a safe distance until they could verify all power supply to the pole had been secured. As they were waiting for the representative from SDG&E to arrive to confirm the power had been cut, the heat of the fire due to arcing caused the steel pole to become molten plasma. It collapsed onto the bleachers near the football field, burning the track and destroying the bleachers. Once the rep from SDG&E arrived on scene and verified the power had been secured and that there was no electrical hazard, firefighters extinguish the fire using a water and foam combination.

## **WHY DOES 5G INFRASTRUCTURE POSE A GREATER FIRE RISK TO RESIDENTS**

It is not the frequency of cell tower fires that concerns us the most. It is the severity of what a single cell tower fire can do. The biggest risk is that WCFs have been brought much closer to local populations and those installations are much more densely situated. Every electrical device including every WCF must be deenergized before a fire can be fought. On a good day that can

happen in 10 minutes. Some cities find that it is 30 minutes or more before the electric company cuts the power. If the firefighters fight the fire before the tower is deenergized, they can be electrocuted. A lightning strike is a type of transient event that may lead to WCF catastrophic failure. Malibu residents will recall in May of 2019, just before Memorial Day weekend, several beaches were closed in Malibu because of a lightning storm that created unsafe conditions. **Thus, the placement of WCFs must allow time and space for escape because a fire originating in a WCF must not be fought by residents or by firefighters until SCE has turned off the power. This is why we propose separation and setback requirements as strategies to mitigate risk to residents.**

One firefighter who is accustomed to fighting fires under Santa Ana conditions in California understood the extreme risk posed by a cell tower fire near a populated area. He described how he would fight such a fire:

*“If the fire involves energized equipment, do not put water on it. Use water only to extinguish anything like trees, grass, vegetation, etc. that it may spread to, and then use water in short bursts if it's adjacent to the pole. Call the utility company immediately so they can de-energize. Keep people back for 2 spans in either direction and make sure all personnel and equipment stay out from under the power lines. Focus on public safety and exposure protection until it's confirmed that the power has been shut off.”*

We firmly believe the greater the distance between WCFs, the more likely an individual(s) would be able to escape homes, schools, hospitals, nursing homes. Distance between towers and from property lines will be critical to escape. Distance from WCFs and property lines may mean the difference between life and death. Due to the length of time it can take to cut the electricity and subsequently fight a fire, particularly one that has spread, we feel it is not worth the very real potential for loss of life if cell towers, small cells or macro towers, are located within residential neighborhoods. Additionally, care should be taken to keep cell towers away from roots of entrance and egress for neighborhoods. The same caution should be taken with densely populated facilities like schools, daycare centers and special zones as designated by the city.

The scars from the 2007 Malibu Canyon Fire and the 2018 Woolsey Fire are still evident on the land. The human toll appears greater. The residents speak openly about PTSD, particularly on those days when the winds blow as they did during the Malibu Canyon Fire and the Woolsey Fire. The winds remind residents of the Santa Anas that carried burning embers sideways, whipped flames such that they consumed many residents' homes, blocked exit routes out of the city and literally terrorized the whole of Malibu – the land, the air, and most of all the residents, their animals and wildlife.

FALL ZONE: We would like to add that we believe expansion of the fall zone should be carefully considered. It must be at least the height of the tower with 50% or at least 25% added onto that because of the falling debris field.

## **UNIQUE FIRE RISKS TO MALIBU**

**VERY HIGH FIRE HAZARD SEVERITY ZONE:** The City of Malibu is designated as a Very High Fire Hazard Severity Zone. The City was devastated by major fires in 2007 and 2018 due to power pole failures. In each instance the utility structures supported wireless communications facilities that either initiated or significantly contributed to the ignition. The 2018 Woolsey Fire consumed over 96,000 acres, destroyed at least 1,643 structures, killed three people, and prompted the evacuation of more than 295,000 people. It was one of several fires in California that ignited on the same day. Malibu has still not recovered. The 2007 fire burned 3,836 acres, 36 vehicles and 14 structures, including Castle Kashan and the Malibu Presbyterian Church, and damaged 19 other structures. It is essential that wireless communications facilities be engineered to prevent fire and withstand fire events as much as possible, and at least in a manner comparable to other commercial facilities with extensive, complicated electronics and wiring, as well as flammable, sometimes hazardous and toxic, materials on site.

**SEISMICALLY ACTIVE:** Malibu is geographically defined by the Santa Monica Mountains to the North, the Pacific Ocean to the South, the Santa Monica Fault to the East and Ventura County to the West. Malibu is a seismically active area with five active faults in the general vicinity. These nearby faults include Malibu Coast Fault, Las Flores Thrust Fault, Santa Monica Fault, Palos Verdes Hills Fault, and the Newport-Inglewood Fault. There are also potential seismic hazards and soil hazards in Malibu. Seismically-induced soil hazards include liquefaction – a temporary, but substantial loss of strength in granular solids, such as sand, silt, and gravel, usually occurring during or after a major earthquake. Seismic activity can also induce subsidence and settlement. Subsidence is deep settlement due to the withdrawal of fluid (oil, natural gas, or water). Seismically-induced settlement occurs in loose to medium dense unconsolidated soil above groundwater. These soils compress or settle with seismic shaking. Settlement can also result from human activities including improperly placed artificial fill, and/or structures built on bedrock or soil with differential settlement rates. There is also risk from expansive soils such as clay; it can swell when wetted and shrink when dried. Wetting can occur from rainfall, groundwater fluctuations, lawn watering, broken water or sewer lines. Expansive soils can result in cracks in foundations. Expansive soils located on slopes can cause slope failure. Unstable soils can produce landslides, debris flows, and rock falls. Hill slopes, which occur in Malibu, have a tendency to fail. Unless engineered properly, development in hillside areas tends to increase the potential for slope failure.

**MARINE ENVIRONMENT:** Malibu is a marine environment. Thus, there are accelerated corrosion issues due to the combination of increased moisture and salt in the air. Metal parts within wireless facilities fail faster in this corrosive environment. This corrosion may adversely affect the structural and electrical integrity of a wireless facility. In addition, corrosion may pose a risk to internal parts which, if corroded and not replaced on a very conservative maintenance schedule, may become fire risks themselves. Therefore, the failure rate of wireless facilities is higher and the need for stricter standards in the very beginning is essential.

**GREATER NEED FOR STRUCTURAL INTEGRITY:** Because of seismic and soil displacement and/or settlement risks as well as the potential for fires, heavy rains, mudslides and landslides, all wireless facility sites must be built to the standards of ANSI/APCO Public Safety Grade Site Hardening Requirements. This standard represents public safety requirements

regarding various characteristics to make mission critical communications network sites sufficiently robust to meet the service availability requirements of public safety. These safety standards can be found in APCO ANSI 2.106.1–2019, or their replacements. Collapsed WCFs are a cause of multiple wireless facility fires. Structural integrity is paramount to keeping Malibu safe from fire started by collapsed wireless equipment.

This confluence of geographic and climate characteristics means that Malibu needs greater fire safety regulations than non-marine, low fire hazard, seismically stable regions. Malibu is the first local government to be informed that the exemption for telecom utilities render the National Electric Code, the California Electric Code, and the Los Angeles County Electrical Code insufficient to protect the public from the electrical risks of WCFs. Malibu can protect itself and its residents by adopting the safety provisions we propose.

## **WIRELESS CELLULAR FACILITIES AS CRITICAL INFRASTRUCTURE**

This final subsection recognizes that the Federal government and state public safety organizations have declared that wireless networks are critical infrastructure for national security and public safety purposes – often at the urging of the wireless industry. Critical infrastructure must be protected too, through appropriate fire and structural safety requirements. We are not aware of any evidence indicating telecom objects to a stronger electric safety protocol. If such an objection exists, it should be made on the record and the basis fully explained.

Cell towers are considered critical infrastructure to maintain communication during times of natural and man-made disasters. Pandemics are one example, as illustrated by the timing of the US Department of Homeland Security, Cybersecurity & Infrastructure Security Agency’s (CISA) March 28, 2020 Guidance on the Essential Critical Infrastructure Workforce: Ensuring Community and National Resilience in COVID-19 Response Version 3.0 (updated on April 17, 2020), available at [https://www.cisa.gov/sites/default/files/publications/Version\\_3.0\\_CISA\\_Guidance\\_on\\_Essential\\_Critical\\_Infrastructure\\_Workers\\_1.pdf](https://www.cisa.gov/sites/default/files/publications/Version_3.0_CISA_Guidance_on_Essential_Critical_Infrastructure_Workers_1.pdf). The Wireless Infrastructure Association applauded the designation. See <https://wia.org/wia-applauds-dhs-action-for-access-to-critical-infrastructure/>.

In Malibu, we are simply asking telecommunications carriers to treat their facilities like the essential infrastructure that it is. Anything less is counterintuitive and ill-advised.

Further, even before the DHS guidance the Association of Public-Safety Communications Officials (APCO) International received final approval from the American National Standards Institute (ANSI) in 2019 for an American National Standard (ANS) that identifies hardening requirements for public safety grade sites. In other words, structural engineering for WCF sites has gone from the concept practiced by some to a standard that should be followed by all.

APCO ANSI 2.106.1-2019 was developed by the Public Safety Grade Site Hardening Working Group. This standard was derived from the 2014 National Public Safety Telecommunications Council (NPSTC) report (Chapter 9) and the work of the original APCO Broadband Committee. The document is intended to assist public-safety communications network builders with the guidelines necessary to build hardened public safety grade networks.

With five (5) active earthquake faults running through Malibu, this is a welcome standard. It reads, in part:

This standard represents public safety requirements regarding various characteristics to make mission critical communications network sites sufficiently robust to meet the service availability requirements of public safety. In other words, what it takes to make network sites “public safety grade” or the extent to which they are “hardened.”

The document is intended to assist public safety communications network builders with the guidelines necessary to build hardened public safety grade networks. This document addresses hardening for wireless transmission and reception sites. Specifically, it addresses the hardening requirements to provide the appropriate site conditions and characteristics for wireless system electronics (e.g., transmitters and receivers) and wireless passive components (e.g., coaxial cables and antennas).

These sites need to withstand the onslaught of natural or manmade conditions and consider the distinct requirements for different geographic locations of the United States, including their likelihood to be subject to severe storms, earthquakes, tornadoes, and other disasters.

In the face of increasing federal emphasis on WCFs as essential to Public Safety and no record of opposition from the telecom industry, we question why anyone would be reluctant about embracing our safety protocol and application content requirements.

**The following is a communication from our Federal experts explaining why our proposed language is so important:**

Our main concern, as we discussed, is that the draft ordinance contains language that indicates that L.A. County will be relying on the FCC's, or other federal agency, standards to ensure safety for us in the community. The challenge is that no safety standards exist at any federal agency for exposure to emissions from wireless infrastructure. As such, you and L.A. County will be relying on safety standards that in reality do not exist.

There are three problems with this.

- First, it is misleading to business, municipalities, and the public who, in reliance on your reference to federal standards, will be making important decisions regarding their health, well-being, and financial security based on the false belief that they are being protected by standards that, in reality, do not exist. Because local government entities like yours know, or should know, about this misplaced reference to non-existent standards, it would be viewed as *prima facie* negligence at the least.
- Second, because there are no standards that are in place to actually protect business, municipalities, and the public from an array of risks that could be attendant to deployment of new broadband, the community could be put in actual danger by this absence of protection. The responsibility for this acquiescence to potentially hazardous circumstances would likely be adjudicated as negligence on the part of the L.A. County as well.
- Third, it is unclear where any liabilities for negligence, conscious disregard for the health and safety of the public, or financial losses related to this detrimental reliance would lie. In most cases like this, the federal government is exempted from liability, leaving the local municipalities, the industry, and the industry's insurers to fight over who is responsible. The costs to L.A. County of paying compensation for damages or sustaining actions against the industry and insurers to shift liability to them would be considerable.

We have drafted some language, below, that can help the county manage both risks to the health and safety of the community and liability that could be associated with a wrong decision here. We admit that the language is written in a very defensive posture to protect the interests of both the county and the county's residents. We believe we are on the same side in this.

Here is suggested language for the Ordinance as discussed.

*While the goal of this ordinance is to ensure that future broadband infrastructure and delivery of Information and Communications Technology in Los Angeles County is robust, efficient and sustainable, it is critical that public safety and environmental integrity are maintained in the process. Reliance on the Federal Communications Commission (FCC) safety guidelines as defined in 47 CFR Sections 1.1307 to 1.1310*

*as presently constructed, will not accrue adequate protection for either the citizens of or the environment in Los Angeles County because of deficiencies in current rules.*

*The following deficiencies must be cured before deployment of new broadband infrastructure, including wireless transceivers and other associated technologies, is allowed so that the responsibilities of local authorities to protect the environment and to ensure the safety of the citizens of Los Angeles County can be met without breach of public trust by officials or accrual of liability for negligence by the county.*

- 1. Because FCC emission guidelines are not the equivalent of actionable safety standards, it is not until adequate safety standards are promulgated by the FCC, or other competent federal or state authority, that the benefits to the citizens of Los Angeles County, including assurance of safety, and to the integrity of the environment in Los Angeles County associated with broadband buildout are greater than the risks.*
- 2. Because there are no defined protocols within 47 CFR Sections 1.1307 to 1.1310 to measure public and environmental exposure due to emissions from the infrastructure that is proposed, such methods protocols must be designed and properly promulgated through federal rule-making or other competent authority procedures before the benefits to the citizens of Los Angeles County, including assurance of safety, and to the integrity of the environment associated with broadband buildout are greater than the risks.*
- 3. Because there are no means of measuring compliance within 47 CFR Sections 1.1307 to 1.1310, and because such is not reliable until such safety and environmental sustainability standards are promulgated by the FCC or other competent federal or state authority, such compliance protocols must be designed and properly promulgated through federal or state rule-making before the benefits to the citizens of Los Angeles County, including assurance of safety, and to the integrity of the environment associated with broadband buildout are greater than the risks.*
- 4. Because there are no defined enforcement mechanisms for non-compliance with exposure standards, no penalties for endangering citizens or the environment, and therefore no incentives to ensure the safety of citizens or the integrity of the environment within 47 CFR Sections 1.1307 to 1.1310, such enforcement protocols must be designed and properly promulgated through federal or state rule-making before the benefits to the citizens of Los Angeles County, including assurance of safety, and to the integrity of the environment associated with broadband buildout are greater than the risks.*



# Americans for Responsible Technology

184 Main Street • Port Washington • New York • 516.883.0887 • [www.AmericansForResponsibleTech.org](http://www.AmericansForResponsibleTech.org)

Date: December 21, 2021

The Honorable Xavier Becerra  
Secretary  
U.S. Department of Health and Human Services  
200 Independence Avenue, S.W.  
Washington, D.C. 20201

The Honorable Janet Woodcock  
Acting Commissioner  
U.S. Food and Drug Administration  
10903 New Hampshire Ave.  
Silver Spring, MD 20993

## Via Electronic Mail

**Re: CITIZEN PETITION FOR IMMINENT HAZARD RULING by the Department of Health and Human Services (HHS) concerning the current official policy of the Food and Drug Administration (FDA) regarding the safety of human exposure to non-ionizing radiofrequency (RF) radiation.<sup>1</sup>**

## I. SUMMARY

Petitioner AMERICANS FOR RESPONSIBLE TECHNOLOGY (ART), a not-for-profit coalition of more than 150 allied organizations and other petitioners Environmental Health Trust, Consumers for Safe Cell Phones, California Brain Tumor Association, Tahoe Stewards, Manhattan Neighbors for Safer Telecommunications, Sally Jewell Cox and Robert Strayton

---

<sup>1</sup> *Environmental Health Trust, et al., Petitioners v. Federal Communications Commission and United States Of America, Respondents* the United States Court of Appeals for the District of Columbia Circuit Argued January 25, 2021, Decided August 13, 2021, No. 20-1025. (“EHT v FCC”) “The phenomenon of radio waves and microwaves moving through space is described as ‘RF radiation.’” (pg. 3)  
[https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/\\$file/20-1025-1910111.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/$file/20-1025-1910111.pdf)

hereby respectfully request that the Secretary of the Department of Health and Human Services (HHS), within 30 days, issue a Declaration with enabling regulations, that an Imminent Hazard to public health currently exists, and to promptly ensure that this Declaration is communicated affirmatively to all public and private entities that are affected by the Imminent Hazard. We submit this Petition in the form required by 21 CFR Section 10.30 pursuant to 21 U.S. 321(g), and Sec. 21 CFR 2.5, for the following reasons:

1. The FDA has not clarified its present official safety policy relating to non-medical devices emitting radiofrequency (RF) radiation.

2. There is widespread public belief and reliance by federal agencies and state governments, physicians, health care providers, fire departments and other critical services, and businesses of all kinds that such FDA health-based standards exist, and that all wireless devices on the market are compliant with those protective standards, when there is no evidence that such a policy has actually been adopted following well established procedures and regulations under the Administrative Procedures Act (APA).

3. Public exposure to non-ionizing RF radiation is growing at an exponential rate, causing a significant percentage of the American public, including our most vulnerable citizens—children, elderly and disabled persons, persons with implanted medical devices and pregnant women—to be regularly and continuously exposed to RF emissions. Meanwhile, scientific studies are documenting biological harm at levels far below the current 25-year-old Federal Communications Commission (FCC) exposure guidelines that only protect from the heating of human tissue.

4. Petitioners and millions like them are being seriously harmed, and left with no recourse or means of escape, unless and until the HHS and FDA immediately address and rectify the present climate of regulatory chaos. (See Declarations in Appendices 2 and 3.)

In sum, Petitioners respectfully request that the HHS Secretary: (i) declare an Imminent Hazard pursuant to CFR 21 Part 2 Sec. 2.5 (Imminent Hazard to the Public Health) within 30 days, and (ii) communicate affirmatively to all private and public entities affected by the Imminent Hazard the present uncertainty relating to whether the FDA's official policy and regulations concerning RF radiation emitted from non-medical devices are APA-compliant. (See Appendix 1 for proposed Preamble, Rule, and Sub-rules.)

## TABLE OF CONTENTS

I.	SUMMARY .....	1
II.	ACTION REQUESTED.....	5
III.	INTRODUCTION .....	5
IV.	RULE AND SUB-RULES .....	11
	A. Declaration of Imminent Hazard to Public Health.....	11
V.	STATEMENT OF GROUNDS .....	15
	A. Introduction.....	15
	B. A History Of The FDA’s Role In RF Emissions Regulation.....	21
	C. Supplemental Legal Authority .....	42
	D. Declarations and Findings.....	47
	E. Conclusion .....	48
VI.	ENVIRONMENTAL IMPACT .....	49
VII.	ECONOMIC IMPACT.....	49
	A. Unassessed National Health Costs.....	49
	B. Economic Costs of the FCC/FDA’s Regulatory Subsidy to the Wireless Industry...50	
VIII.	CERTIFICATION .....	51
IX.	IDENTIFYING INFORMATION.....	51
X.	APPENDIX 1: Petitioners’ Proposed Rule and Subrules Relating to a Declaration of Imminent Hazard to Public Health — Section (i) et seq. pg. 70 (Effective January 1, 2022).....	53
XI.	APPENDIX 2: Declarations from Scientists, Doctors and Organizations .....	60
	A. Environmental Health Trust.....	61
	B. Americans for Responsible Technology .....	109
	C. David O. Carpenter, M.D.....	138
	D. Jenny DeMarco and Mary Bauer — Virginians for Safe Technology .....	142
	E. Consumers for Safe Cell Phones — Cynthia Franklin .....	151
	F. Camilla Rees .....	155
	G. StopSmartMeters.org — Joshua Hart .....	164
	H. Lawrence J. Gust — Building Biology Institute.....	179
	I. Sharon Goldberg, M.D.....	185
	J. Prashanthi Atluri, M.D.....	190
	K. Tahoe Stewards, LLC .....	197
	L. Warm Beach Neighbors for a Safe Community .....	200
	M. Eric Windheim .....	203
XII.	APPENDIX 3: Declarations from Individuals .....	217
	N. Ellen Marks .....	218
	O. Jennifer Andree .....	222
	P. Sally Jewell Coxé.....	226
	Q. David Benedict.....	243
	R. Monica Eisenstecken.....	246
	S. Marcia Haller .....	251
	T. Robert Strayton .....	262
	U. Shirley Jackson .....	267
	V. Laurie Brown .....	272

W. Ruth Fennesy Moss .....	276
X. Courtney Kelly .....	279
Y. Margot Shaw .....	281
XIII. APPENDIX 4 — Examples of Media’s Reliance on FDA .....	284

## II. ACTION REQUESTED

Petitioner requests that the Secretary of HHS direct the FDA to (i) within 30 days declare an Imminent Hazard, and (ii) promptly adopt and implement an expedited APA-compliant rulemaking process. These expeditious steps are long overdue, especially given the recent court comments about the inadequacy of specific FDA’s statements relied on by the FCC. Statements, omissions, and actions taken by other agencies, industry and the public in reliance on presumed-to-be-established, but in fact non-existent, FDA APA-compliant safety standards for human exposure to RF radiation are false, misleading and dangerous to the public health during a time of unprecedented public exposure, and create an Imminent Hazard to the public health.

## III. INTRODUCTION

On August 13, 2021, the United States Court of Appeals for the District of Columbia Circuit in its ruling in *Environmental Health Trust et al. v The Federal Communications Commission (FCC)*<sup>2</sup> cited three statements attributed to the FDA by the FCC that the FDA had established official national RF safety standards upon which the FCC can rely.

The Court disagreed with the FCC’s contention that such statements or actions by the FDA were determinative, ruling:

---

<sup>2</sup> *Environmental Health Trust, et al., Petitioners v. Federal Communications Commission and United States Of America, Respondents* the United States Court of Appeals for the District of Columbia Circuit Argued January 25, 2021, Decided August 13, 2021, No. 20-1025.

“We find them [the three statements] to be of the conclusory variety that we have previously rejected as insufficient to sustain an agency’s refusal to initiate a rulemaking.

“The statements from the FDA on which the Commission’s order relies are practically identical to the Secretary’s statement in *American Horse* and the Commission’s statement in *American Radio*. They explain that the FDA has reviewed certain information—here, ‘all,’ ‘the weight,’ or ‘the totality’ of ‘scientific evidence.’

“And they state the FDA’s conclusion that, in light of that information, exposure to RF radiation at levels below the Commission’s current limits does not cause harmful health effects. But they offer ‘no articulation of the factual... bases’ for the FDA’s conclusion. *Am. Horse*, 812 F.2d at 6 (internal quotation marks omitted).

“In other words, they do not explain why the FDA determined, despite the studies and comments that Petitioners cite, that exposure to RF radiation at levels below the Commission’s current limits does not cause harmful health effects. Such conclusory statements ‘cannot substitute for a reasoned explanation,’ for they provide ‘neither assurance that the [FDA] considered the relevant factors nor [do they reveal] a discernable path to which the court may defer.’ *Am. Radio*, 524 F.3d at 241. They instead represent a failure by the FDA to address the implication of Petitioners’ studies: The factual premise — the non-existence of non-thermal biological effects — underlying the current RF guidelines may no longer be accurate.”

The origin of the developing national health emergency which is the basis for this Petition, is the apparent absence of official FDA safety standards, and the misleading and false claims being attributed to the FDA concerning its official policy on the safety of RF emissions from a range of devices and systems for communication and information exchange. The hazard is growing as our country is now blanketed with these devices, which include but are not limited to cell towers, rooftop and pole mounted antennas, smartphones, Over-the-Air Reception Devices (OTARD), smart meters, Wi-Fi, Internet of Things, and other wireless devices and systems.

In their daily routines Americans are exposed to RF radiation from numerous sources:

1. Their own cell phones, and the cell phones of others near them.

2. Wi-Fi routers in their homes, in their places of work, and in the cafés, bars, restaurants, and retail stores they frequent.
3. Cell towers placed in their communities to service cell phones and wireless devices.
4. Domestic wireless devices such including household surveillance cameras, heating and cooling controls, smart meters, and major and even minor appliances such as coffeemakers which are now dubbed “smart devices.”

In short, the average American is exposed to constant RF radiation exposure wherever he or she is, no matter what time it is, 24 hours a day, even in their own homes.

This widespread acceptance of wireless communications, however, depends upon two important factors: 1) the utility, convenience and security of the services provided; and 2) a belief that continuous exposure to RF radiation from multiple sources has been evaluated in an APA-compliant rulemaking and policy-making process by federal health agencies and found to be safe.

The latter assumption becomes all the more critical as millions of new antennas go up around the nation. Those antennas will be placed on utility poles near residences in front yards and on street corners, normally at second-floor level, to service the emerging fifth generation or 5G wireless network.

### **Petitioners’ Request**

Specifically, Petitioners request that the HHS Secretary:

(i) declare an Imminent Hazard on an expedited basis based on the apparent absence of official standards as well as continued misstatements, made by many commentators and decisions makers, that FDA has established RF safety standards through required administrative procedures, when nothing in the public record establishes that it has adopted such standards; and

(ii) promptly work to ensure that this declaration is communicated affirmatively to all public and private entities that are impacted by the Imminent Hazard.

Given that Petitioners are asking for a simple decision — clarification of FDA official policy concerning the credible creation of RF safety standards — an Imminent Hazard declaration and a subsequent expedited ruling by the Secretary to resolve the present Imminent Hazard is urgent and reasonable.

Under the rules proposed in this Petition, the HHS, or the FDA on its own initiative, should make the following clarifications:

**(i) No Established APA-Compliant HHS and FDA RF Standards for Human Exposure to Non-Medical Wireless Devices Currently Exist.** Neither HHS nor the FDA have completed the requisite work required to research, establish or enforce official, APA-compliant, human health safety standards for exposures to RF emissions from a wide range of devices and systems, currently in operation as well as anticipated in the future, and thus have no official safety standards upon which the public can rely;

**(ii) Increasing Public Exposure Combined with the Apparent Absence of APA-Compliant FDA Standards is Creating a Imminent Hazard.** Regarding the rapidly proliferating deployment of wireless devices and networks, the assertion that the FDA has established or enforced official RF safety standards promulgated through an official safety standard-setting process for RF emitting devices is false, misleading, and imminently dangerous to the public health.

The Secretary's authority and obligation to declare an Imminent Hazard and rectify false claims is well established. As analyzed in detail in the Statement of Grounds, the HHS' general authority to prohibit false or misleading statements relating to the sale of a device is contained in

21 U.S. Code 331 (2). Sec. 21 CFR 2.5 of the FDA's own rules which explicitly authorize the agency to address an Imminent Hazard to public health. It states:

The *imminent hazard* may be declared at any point in the chain of events which may ultimately result in harm to the public health. The occurrence of the final anticipated injury is not essential to establish that an *imminent hazard* of such occurrence exists. (Emphasis added.) The general authority of the HHS Secretary over radiative devices is contained in 21 U.S. Code § 360kk (Performance standards for electronic products) (a) 1 states:

“The Secretary shall by regulation prescribe performance standards for electronic products to control the emission of electronic product radiation from such products **if he determines that such standards are necessary for the protection of the public health and safety.**” (Emphasis added.)

To summarize, a public health crisis currently exists. It originates from the apparent absence of official standards for exposure, massive increases in exposure for the public, especially vulnerable populations, and misleading and false claims being attributed to an official policy of the FDA. These misleading and false claims self-propagate, acquiring a life of their own, as each new misleading assertion further distorts the truth, so that the public no longer knows what is safe and what is not. The HSS Secretary has the immediate means to rectify this Imminent Hazard to the public, which is to issue the proposed declaration and rule. In any event, the Secretary must act.

### **Important Recent Developments**

On November 30, 2021 the FDA publicized a Request for Nominations for voting members of a Public Advisory Committee known as the Technical Electronic Product Radiation Safety Standards Committee (TEPRSSC) within the Center for Devices and Radiological Health. The named Committee was originally established by a 1968 Act of Congress. See Jan. 26, 2021 letter from Ashley S. Boizelle, Deputy General Counsel of the FCC.<sup>3</sup>

---

<sup>3</sup> <https://ehtrust.org/wp-content/uploads/20-1025-FCC-response-to-Court-from-oral-argument.pdf>

Pursuant to the Act, the Committee was established “to provide consultation before the [FDA] prescribes any performance standard for an electronic product.” The Committee has no role when the FDA acts, as here, to “(A) collect and make available, through publications and other appropriate means, the results of, and other information concerning, research and studies relating to the nature and extent of the hazards and control of electronic product radiation; and (B) make such recommendations relating to such hazards and control as [it] considers appropriate.”<sup>4</sup>

This minor step of re-constituting a dormant advisory committee is not an APA-compliant rulemaking because, as the FCC Counsel Boizelle’s letter makes clear, neither the Committee nor its Radiation Working Group has the authority to make FDA policy:

“In this case, the FCC, by Notice of Inquiry, sought the views of interested members of the public and expert federal agencies on the issue of whether it should reexamine its radiofrequency emission limits. JA 161-363. It specifically sought the views of the Director of the FDA’s Center for Devices and Radiological Health, Dr. Jeffrey Shuren. JA 8184. No statute or regulation required the FCC to seek out the views of the Committee, or otherwise intrude into the process by which the FDA (or any other federal agency) decides to formulate its views on a matter upon which the FCC has sought comment. Indeed, FDA regulations generally prohibit federal employees from conferring with the Committee directly. 21 C.F.R. § 14.31(d).

As mentioned previously, the DC Circuit Court of Appeals on August 13, 2021 found that the conclusory and arbitrary opinion by Dr. Jeffrey Shuren, Director of the FDA’s Center for Devices and Radiological Health, does not, and cannot represent or constitute official FDA policy regarding RF safety standards. (See *Environmental Health Trust et al. v. FCC* pp. 11-15.) Yet, the FDA has not moved with urgency to declare an Imminent Hazard, nor to establish an expedited, APA-compliant rulemaking.

---

<sup>4</sup> 21 U.S.C. § 360ii(b)(1); see FCC Br. at 23.

Hence, the Request by the FDA to reactivate the (TEPRSSC) must be scrutinized carefully. Taken on its face, Petitioners applaud the FDA for reactivating this Committee, especially if it accomplishes its stated goal of enlisting leading expertise to help the agency and other federal agencies develop balanced RF safety standards that adequately protect the public. However, the Request does not address the Imminent Hazard claim, nor the requested expedited rulemaking of the present Petition. In fact, interpreting the FDA's Request as a legitimate response to the issues raised herein entails the distinct additional risk that it will increase and deepen the Imminent Hazards created by widespread misinformation, because other federal agencies, the Congress, state and local governments, and the general public may believe and detrimentally rely upon the mirage that the FDA has actually done something to credibly and legally rectify the deficiencies in its failure to establish APA-compliant regulations regarding RF, when it has not. Worse, relying solely on the advisory committee, which has no rulemaking powers, will create impermissible delay while the house is burning.

#### **IV. RULE AND SUB-RULES**

**AMERICANS FOR RESPONSIBLE TECHNOLOGY and associated petitioners request the HHS and the FDA to adopt the following RULE and SUB-RULES, as set forth in Appendix 1.**

##### **A. Declaration of Imminent Hazard to Public Health**

At present there is considerable confusion regarding the FDA's official policy regarding RF safety standards and regulations. On August 13, 2021, the DC Circuit Court of Appeals in the case of *Environmental Health Trust et. al v. FCC* made clear (pp. 11-15) that the FDA itself must

clarify its own position regarding RF safety based on substantial new scientific evidence in the record. This request for the Declaration of an Imminent Hazard is intended to begin the process of clarifying and remedying the current confusion and misperception regarding RF radiation safety.

HHS, and its regulatory agency the FDA, with declared jurisdiction over RF radiation emitting devices, have apparently neither established nor enforced official safety standards for today's rapidly proliferating technologies, as evidenced by the confusion between the federal judiciary and the Federal Communications Commission (FCC) on this very point. Yet the ubiquitous and densifying deployment continues. RF devices, including smart phones, smart meters, wearable wireless devices, cell towers, laptop computers, routers, autonomous vehicles, earth and base stations, and Internet of Things-related products are proliferating everywhere.

The public record shows that there exist no official FDA standards regulating the safety of the above radiation-emitting devices, systems and processes that might, and which evidence suggests do in fact,<sup>5</sup> adversely affect the health and wellbeing of members of the American public. More specifically, no HHS agency, including the FDA, has engaged in the rigorous procedures required by the Administrative Procedure Act (APA) for such broadly applicable and consequential decisions. These include widely-practiced government hazard evaluations, exposure assessments, risk assessments, RF and EMF dose-response modeling, and other scientific procedures, as well as the APA-required Public Notice and Comment process, with public hearings, Public Boards of Inquiry, that lead to the official adoption and enforcement of safety standards. There has been no official process or procedure to formulate, adopt, and promulgate any official policy or rulemaking relating to RF exposures and public safety, as

---

<sup>5</sup> See Appendix 1 for Declarations setting out harms from RF emissions and footnotes to this petition.

prescribed by the APA or any other authority. Notably, IEEE, the “world’s largest technical professional organization dedicated to advancing technology for the benefit of humanity”<sup>6</sup> in its official publication *IEEE Microwave Magazine* for January 2022 includes an article, *Health Safety Guidelines and 5G Wireless Radiation*, that validates that material gaps exist in studies across the full range of wireless mobile bands, and that there are “significant anomalies” in even recently updated safety recommendations.<sup>7</sup> The FCC’s recently updated safety recommendations were remanded in federal court, and those recommendations were based on the FDA’s apparently non-APA-compliant process.

Moreover, the FDA has continued to portray prominently its direct role in ensuring the public health is protected from RF devices. Its website shows images of people operating such devices in a manner that suggests that such usage has been carefully studied and determined by the FDA to be safe. [see Figure 1].<sup>8</sup>

---

<sup>6</sup> [www.ieee.org](http://www.ieee.org)

<sup>7</sup> IEEE Microwave Magazine: For the Microwave & Wireless Engineer, Volume 23, Number 1, January 2022. *Health Safety Guidelines and 5G Wireless Radiation*, by Dr. James C. Lin. <https://ieeexplore.ieee.org/document/9632507>

Dr. Lin is Professor Emeritus in the Department of Electrical and Computer Engineering at the University of Illinois Chicago. He is an expert on the biological interactions of wireless radiation. He is a fellow of the American Association for the Advancement of Science and the Institute of Electrical and Electronics Engineers (IEEE). Since 2006 he has been the Editor-in-Chief of the *Bioelectromagnetics journal* published on behalf of the *Bioelectromagnetics Society* (BEMS), an international organization of biological and physical scientists, physicians and engineers.

<sup>8</sup> From: <https://www.fda.gov/radiation-emitting-products/cell-phones/scientific-evidence-cell-phone-safety>. See generally: “[Are you carrying your cellphone too close to your body?](#)”, by Nara Schoenberg, Chicago Tribune, January 26, 2017.

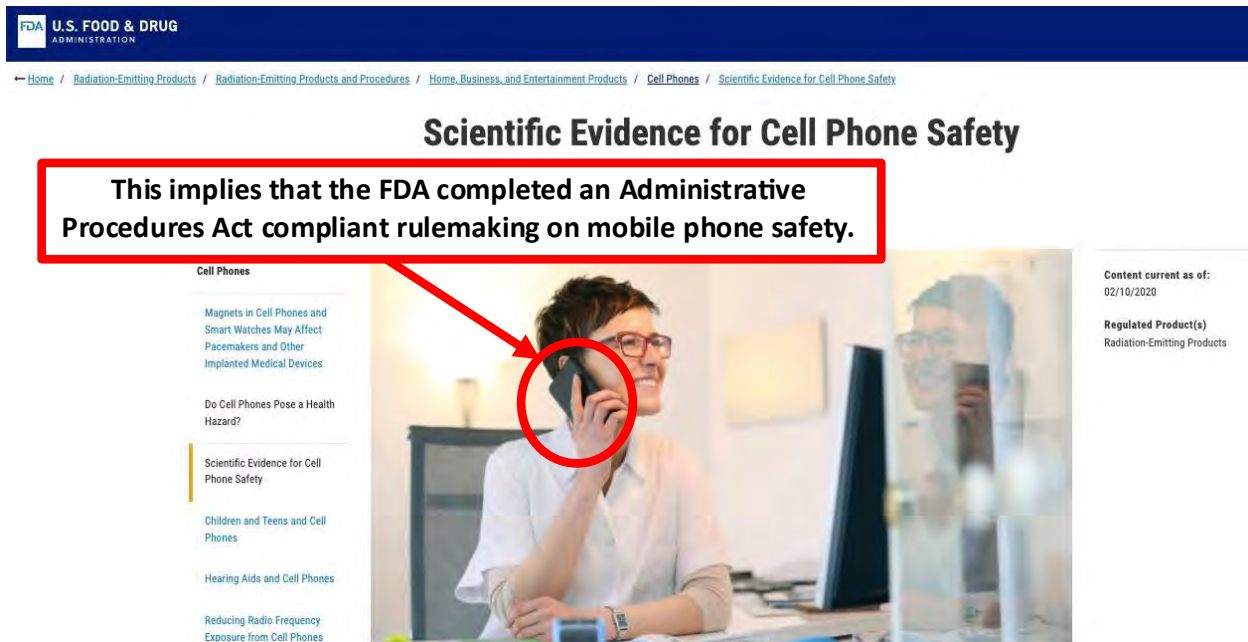


Figure 1

Because of the lack of affirmative regulatory action by HHS or FDA, it is false and/or misleading and violative of the principles of truthful and science-based decision-making that underpin the Food, Drug and Cosmetic Act, for any agency, governmental organization, business entity, or individual to refer to as policy, rely on, or claim to rely on so-called safety standards for RF exposure established by the FDA. The goal is to warn the public not to take comfort in an unjustifiable sense of security based on the belief that the FDA has officially established safety standards for RF emissions. In fact, the FDA has not done so.

The FDA claims regulatory subject matter jurisdiction, knowledge, and responsibility over risk management for wireless communication devices, and has done so from the early 1980s until the present time. It is therefore reasonable for other regulatory agencies, state and local governments, healthcare professionals, non-profit organizations, businesses, consumers, and the public to expect and rely upon the FDA to speak definitively on RF wireless device and systems

safety. Further, speculative or conclusory statements or opinions issued *ex parte* by agents of the FDA or other agencies within the authority of HHS, not based upon rigorous, science-based and comprehensive risk analysis as prescribed under the APA and other regulatory precedents for such subject matter, cannot henceforth be considered or relied upon as official U.S. government policy.

An immediate Declaration of Imminent Hazard is warranted, justified and required to protect the public from further harm – immediate or long-range – due to unsafe levels of exposure to RF radiation.

## **V. STATEMENT OF GROUNDS**

### **A. Introduction**

The FDA has failed to follow the required APA notice and comment rulemaking process when evaluating and establishing safety standards, according to the prescribed practice within the federal government for assessment of risks, in this case for RF emissions and consequent human exposure from wireless information and communication technology devices. Expedited rulemaking is long overdue. Available evidence suggests that the FDA has neither established nor enforced appropriate safety standards for non-medical devices and systems that emit RF radiation. If the FDA had done so, there would have been a public record that included specific protocols and public notice provisions as required under both the APA and the common regulatory requirements for exposures from devices and systems to the general public.<sup>9</sup> The FDA

---

<sup>9</sup> Another federal agency, the Federal Communications Commission (FCC), has conducted such a public inquiry regarding human exposure to RF radiation, but since the Commission admits it has no expertise in human health matters or public health experts on staff who can analyze complex biological studies, not surprisingly, its findings have been dismissed by the federal court as “arbitrary and capricious.” See generally, *EHT v. FCC*.

has yet even to convene a formal meeting of the Radiofrequency Interagency Work Group to consider this issue, or to establish a Public Board of Inquiry, or to conduct Notice and Comment rulemaking, or follow well-established risk analysis and management procedures. Yet, the impression in the broad reaches of the public is that the FDA has indeed followed appropriate procedures for setting standards and indeed engages in enforcement of such standards, and that FDA personnel monitor the use of RF emitting devices and systems such that the public health is protected. This impression of public safety guarantee, which has been propagated both explicitly and implicitly across U.S. regulatory agencies, has led both the public and private sectors to make safety decisions that are ill-informed and potentially dangerous.

**1. Detrimental Reliance on Misleading and False Claims**

As noted above, large segments of American society today believe, and are being encouraged to rely upon the FDA's prominent, though grossly misleading website images and statements assuring the safety of RF exposure, even as related to children. Those conditions leave the impression that the FDA has established and rigorously monitored and modified safety standards; and that presumably it has followed the APA notice and comment rulemaking process covering public exposure to RF emissions from devices that manipulate biologically active waveforms as a means of communication and information transfer. Making conclusory or speculative unsupported statements asserting or implying that the FDA has established through proper procedures an official policy position on the safety of potential hazards presented by RF radiation, when in fact it has not, is false and misleading and is creating an Imminent Hazard to public health.

## **2. No Science-Based, Comprehensive Risk Assessment Process Has Been Completed**

The FDA's intentions with respect to RF safety standards are unclear, as the agency has yet to indicate publicly or officially any intended actions or which best practices for risk assessment, hazard evaluation, and risk management the agency is using to make, and support unofficial professional opinions propagated through FDA personnel on the safety of RF; or pursuant to what authority FDA officials are being permitted to rely upon in publicly stating such opinions. Indeed, by commission or omission, the FDA is creating the impression that it is protecting the public from RF radiation exposures, when it is not. Rather, the agency has supported and not corrected the dissemination of false and misleading information. For example, the FDA repeatedly states the unsupported conclusion on its website, in personal communications by FDA officials, and in press releases, that the scientific evidence does not establish that RF exposure can be harmful. It makes these unofficial statements without indicating that the scientific and medical evidence also fails to establish that the current growing exposure of RF in workplaces, schools, homes and public places through devices and delivery systems is safe. Other federal agencies, the medical community, wireless companies, and state and local governments are openly relying upon and justifying their own potentially harmful actions to the public while encouraging the wireless industry and others to rely on the proposition that the FDA has officially determined standards and has concluded that current exposures of the general public to RF are safe. Yet, the public record shows that the FDA has made no such official findings or conclusions, nor that the agency has implemented any appropriate pre- and post-market monitoring of the health effects of RF radiation-emitting non-medical devices.<sup>10</sup>

---

<sup>10</sup> The FDA must have some experience with non-thermal biological effects associated with RF emitting medical devices, because it has clearly asserted jurisdiction and regulated wireless medical devices for many years.

**3. FDA is Actively Encouraging or Allowing its Employees to Encourage False Claims about its Role in Establishing RF Emissions Safety Standards, and is Improperly Assigning the Burden of Proof of RF Harms to the Public**

As previously noted, the FDA continues to publish misleading and false statements on its website regarding RF safety. The website refers to the paucity of proof of harm caused by devices emitting RF. It does not indicate what evidence it has relied on, or the source of that evidence, to support its implied conclusions. It does not reveal that its statements and images on its website, upon which the general public, including health professionals, are relying, were created without APA-compliant risk assessments, hazard evaluations, dose-response modeling, risk management recommendation derivations and other protocols including notice-and-comment rulemaking. It does not indicate an awareness of evidence that fails to support the unqualified safety of RF/RMF emitting devices and systems, and it does not cite the legal basis on which it has decided to place the burden of proof on the public to prove causation of such harms, rather than upon the producers of these RF emitting devices and systems to show safety according to established rules and protocols.

The producers and purveyors of wireless technology, as with all commercial products, are in a far better position than the public to assess these risks, and are in a far better position than the public to assess the severity of these risks and to recommend mitigations of the risks. By

---

Regarding medical devices, the FDA currently grants categorical exclusions from complying with NEPA's requirement to prepare an Environmental Impact Statement for some medical devices under some conditions. (See: 21CFR25.34) However, this regulation, which presumably complied with APA requirements, omits any reference to non-medical devices as listed in this Petition. Hence, the natural implication is that applications involving these RF radiation-emitting non-medical devices are not subject to such a NEPA exclusion, unless and until the FDA conducts a similar APA-compliant process to adopt this regulation amendment. The same omission on RF radiation-emitting non-medical devices is also evident in the FDA's present regulations pertaining to Premarket Notification Procedures (See: Section, 807.81, Subpart E). Such continuing regulatory uncertainty is itself contributing to the Imminent Hazard, which is the focus of this Petition.

statute and practice, manufacturers, producers and purveyors of technology have a general duty to protect those who come into contact with their products and services. The FDA itself does not indicate which standards and practices it is using to assess risks and to prescribe risk management mitigation. Whatever the standards the FDA is using, at the very least, the agency is required under the APA to disclose these procedures and practices to the public. But as of this date, none of these disclosures has occurred.

In the case of *Environmental Health Trust, et al., Petitioners v. Federal Communications Commission*, in the United States Court of Appeals for the District of Columbia Circuit, the Court made clear the non-official status of FDA statements on RF emissions and exposures in dismissing the Federal Communications Commission's reliance on these FDA opinions and statements in defending its RF rules. Further, the Court pointed out the inadequacy of the FDA's review methodology in reaching those opinions. The Court, in citing three specific instances of the FDA opining on RF health effects, stated specifically:

“...they do not explain why the FDA determined, despite the studies and comments that Petitioners cite, that exposure to RF radiation at levels below the [Federal Communication] Commission's current limits does not cause harmful health effects. Such conclusory statements cannot substitute for a reasoned explanation, for they provide neither assurance that the [FDA] considered the relevant factors nor [do they reveal] a discernable path to which the court may defer. *Am. Radio*, 524 F.3d at 241. They instead represent a failure by the FDA to address the implication of Petitioners' studies: The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate.”

#### **4. Irreversible Actions**

In spite of the FDA lacking an official policy establishing any “safety” standards for RF exposure and the devices producing such radiative emissions, many other federal agencies including the Federal Communication Commission, the National Aeronautics and Space Administration, the Department of Defense, the Department of Commerce, the Environmental

Protection Agency, the Council on Environmental Quality, the Occupational Safety and Health Administration, and the U.S. Air Force, health care providers, and municipal governments are taking critical and essentially irreversible actions that evidence suggests might directly compromise the health and well-being of their communities, all based on their misinformed belief that the FDA has already made a determination of safety for RF emissions and consequent exposures from the full range of devices and systems that employ such technology. These actions are based on the core premise and belief that the FDA has established official RF safety standards through an APA-compliant process, and that adhering to those standards provides adequate margins of safety for their constituents. The FDA has never officially evaluated the totality of the science for and against the assertions of safety for RF emissions and exposures according to APA-compliant protocols, yet it posts unsupported conclusions on its website.

#### **5. Industry Compliance Defense Based on False Claims**

The wireless telecommunications industry is taking advantage of the present state of regulatory uncertainty, ambiguity, and inaction by the FDA. Industry representatives and counsel are routinely and consistently representing that wireless devices and delivery infrastructure have the FCC and FDA imprimatur of safety, and wireless companies are claiming legal rights and defenses based on this premise. Indeed, the FCC has adopted formal, industry-friendly “shot clock” regulations to accelerate the proliferation and densification of RF macro and small cell towers and transmission antennas from densely populated residential communities to pristine national forests. Further, state legislatures such as California’s<sup>11</sup> are seeking to pass new laws to accelerate tower and antenna densification near vulnerable locations such as school classrooms and daycare centers, based on the prevailing false and unproven premise that the FDA has set

---

<sup>11</sup> See e.g. [California Telecom Bills Crushing Local Government Control](#) (Physicians for Safe Technology, May 12, 2021).

safety standards in an APA-compliant rulemaking process and is actively monitoring and enforcing compliance with these standards. None of this is true.

Telecommunication companies are asserting that the governmental regulatory system, including the FCC, with the FDA's imprimatur, has established safety standards for RF emitting devices and infrastructure, such that the industry can do as it pleases, so long as the industry is in compliance. However, because the FDA's official policy is unclear, and the derivative referrals by the FCC to the non-existent FDA policy are commonplace, the entire matter of compliance is in question. Local community boards across the country are capitulating to wireless companies, convinced that the 1996 Telecommunications Act and the FCC's maximum thermal emission guideline that it is based upon preempt any legal right to defend themselves. In that the FCC is claiming that the FDA has provided its scientific imprimatur of safety on the FCC's thermal standards, and the FDA is not repudiating these claims, the FDA itself is contributing significantly to the confusion, and to local municipalities making erroneous decisions based on misrepresentations of current federal government RF policy.

## **B. A History Of The FDA's Role In RF Emissions Regulation**

Microwave weaponry and advanced wireless communication technologies have been in accelerated development within the Department of Defense since World War II. During this period government contractors involved in that work, including such technology leaders as Motorola Inc. and Bell Telephone Laboratories (Bell Labs) were closely monitoring the commercialization potential of selected applications of that technology in the civilian marketplace. Although portable satellite phone technologies had been in use from the 1960s, the concept of cellular phones, where a new transmission infrastructure was required to facilitate functionality, began to be adopted into public use in 1984.

At that time the newly formed Center for Devices and Radiological Health (CDRH) within the FDA became the regulatory agency of record for cell phones defined as radiation emitting devices under the law.<sup>12</sup> The first significant act of the CDRH regarding wireless technology was the critical decision over whether radiation-emitting cell phones should be treated in the same way as other radiation-emitting devices, and thus subject to pre-market testing prior to release into the consumer marketplace and subsequent post-market surveillance after deployment.

The CDRH decision in 1984, based primarily on input from the commercial electronics industry-controlled Institute of Electrical and Electronics Engineers (IEEE), was to grant a variance that relieved the wireless phone industry of the requirement for pre-market testing of cell phones based on a so-called “low power exclusion.” The rationale for this variance was derived from advice given to the CDRH by IEEE based on downward dose extrapolations from historical studies of microwave ovens. Those extrapolations suggest that the power necessary to transmit and receive cell phone signals was below thermal induction limits, and therefore not biologically active.<sup>13</sup> Without heating of tissue, it was postulated that there was no viable mechanism for cell phones to cause health effects in users. Without any regulatory process or public disclosure, the variance was granted by the FDA. Cell phones were allowed into the commercial marketplace in 1984 without any pre-market testing, post-market surveillance,

---

<sup>12</sup> The Center for Devices and Radiological Health was the result of a 1980 merger of the FDA’s Bureau of Radiological Health and Medical Devices.

<sup>13</sup> Microwave oven technology is wholly distinct from cell phone and other wireless communications technology in numerous functional characteristics, including the absence of reception capacity and the requirement for high intensity power driving heating of foodstuffs within a closed compartment. The field intensity to cause such heating effects are many thousands of times higher than power levels needed to drive wireless communication device signals, and therefore mostly irrelevant to common use of wireless devices.

systems for adverse event reporting, or any other regulatory monitoring by the FDA or any other regulatory agency.<sup>14</sup>

In 1992 questions were raised by the media, tort lawyers, and by consumer groups about the potential for cell phones to cause brain cancer.<sup>15</sup> The public concern led to Congressional hearings under then Congressman Ed Markey of Massachusetts who at the time was Chair of the Sub-Committee on Telecommunications and Internet.<sup>16</sup> Pursuant to Congressional interest, the FDA again exercised its jurisdiction based on the assertion that cell phones were radiation-emitting devices. The grant to cell phone companies by the FDA in 1984 of an exemption from the requirement of pre-market testing was shielded from public view. By 1992 the FDA adopted a more public role, prompted in large part by the Congressional interest and Congress' need for explanations.<sup>17</sup>

The FDA's assertion of its jurisdiction over cell phones in 1993<sup>18</sup> was bold and included implied admonitions that, without proper data produced by the wireless industry to support safety, the 15 million cell phones in use at the time could be recalled by the FDA under its authority granted in the Radiation Control for Health and Safety Act of 1968. In a July 19, 1993 letter from Dr. Elizabeth Jacobson, FDA's Deputy Director for Science for the Center for

---

<sup>14</sup> It is noteworthy that as the build-out of cellular phone infrastructure advanced during that same time period, concern was raised that equipment on cell phone towers emitted radiation into the environment, prompting involvement of the Environmental Protection Agency and the Department of Energy to begin exploring the health and environmental impact of those emissions.

<sup>15</sup> The triggers for this interest were disclosures made on a CNN Larry King Live television segment where neurologist Dr. David Perlmutter displayed an X-ray of a brain tumor in one of his patients, Susan Reynard, showing the proximity of the tumor to the placement of her cell phone next to her head. Her husband brought a wrongful death suit against cell phone manufacturer Motorola. Further insight into this aspect can be found in the book, *Cell Phones: Invisible Hazards in the Wireless Age* by Dr. George Carlo and Martin Schram.

<sup>16</sup> Those hearings made clear that cell phones had not been pre-market tested, and that there was not a sufficient database to assess definitively whether cell phones posed a danger to consumers. In response, the cell phone industry pledged up to \$25 million to study the issue.

<sup>17</sup> Indeed, the FDA was pressured for explanations, as it was its decision to exempt cell phones from pre-market testing that was central to the argument about brain cancer risk and cell phones.

<sup>18</sup> See Health Effects of Cellphone & Cell Tower Radiation: Implications for 5G. *Center for Family and Community Health, UC Berkeley* - November 3, 2021. <https://www.coeh.berkeley.edu/webinar-archive/21web1103>

Devices and Radiological Health, to then president of the Cellular Telephone Industry Association (CTIA) Thomas Wheeler, the FDA's regulatory jurisdiction and role was made clear.

In pertinent part, Dr. Jacobson's letter to Mr. Wheeler stated:

"I am writing to let you know that we were concerned about two important aspects of your press conference on July 16 concerning the safety of cellular phones, and to ask that you carefully consider the following comments when you make future statements to the press.

First, both the written press statements and your verbal comments during the conference seemed to display an unwarranted confidence that these products will be found to be safe. In fact, the unremittingly upbeat tone of the press packet strongly implies that there can be no hazard, leading the reader to wonder why any further research would be needed at all. (Some readers might also wonder how impartial the research can be when its stated goal is "a determination to reassure consumers." And when the research sponsors predict in advance that "we expect the new research to reach the same conclusions, that the cellular phones are safe.")...

We are even more concerned that your press statements did not accurately characterize the relationship between CTIA and the FDA... [S]ince it is not yet clear whether we will help to direct the research program, it is premature to state that we will credential the research.

To sum up, Mr. Wheeler, our role as a public health agency is to protect health and safety, not to "reassure consumers." I think it is very important that the public understand where we stand in evaluating the possibility that cellular phones might pose a health risk."

Changes in authority and responsibility prescribed in the Telecommunications Act of 1996 (TCA) created further confusion regarding the ongoing role of the FDA with respect to wireless technology risk assessment and management. It is widely accepted that the TCA transferred some portion of regulatory authority for wireless device safety regulation to the Federal Communications Commission (FCC).<sup>19</sup>

---

<sup>19</sup> Legislative language in the Telecommunications Act of 1996 is nebulous with respect to the intent of Congress regarding the ongoing role of the FDA, the Environmental Protection Agency, the National Institute for Occupational Safety and Health, and the Occupational Safety and Health Administration with respect to the safety of wireless devices and wireless technology overall. Prior to the passage of the 1996 Act, each of those agencies had

In so doing, the TCA appeared to change some of the FDA's official role with respect to wireless technology health effects and risk management to an advisory capacity to the FCC. Nonetheless, data development and information flow from various research studies and other programs addressing wireless health concerns remained directed to the FDA, and to the other relevant government agencies with expertise in risk assessment and management. A special Interagency Working Group (IAWG) on wireless health effects was convened by the FDA in 1993 and chaired by the FDA through at least 1999.<sup>20</sup>

## **6. Historical Subject Matter Expertise**

As the regulatory agency of record since the early 1980s, the FDA also has within its files and based on experience, historical subject matter knowledge that would support more comprehensive risk analyses and risk management recommendations, following minimally rigorous standards as required under the APA.

One key scientific data resource for the FDA was a comprehensive program funded by the wireless industry through an independent trust. Following an expression of Congressional interest and the exercise of regulatory authority by the FDA, the wireless industry, under the auspices of the CTIA, funded a \$28.5 million program under an independent entity referred to as the Wireless Technology Research (WTR). The WTR's purpose was to address the problem of cell phone safety and the management of attendant risks.<sup>21</sup>

---

significant authority in managing hazards associated with wireless technology. In any event, IEEE, in an official publication, IEEE Microwave Magazine, noted that there are significant gaps and anomalies in human health regulations as related to RF.

<sup>20</sup> It is noteworthy that following the apparent transfer of some regulatory authority to the FCC under the TCA in 1996, career professionals with experience and competency in wireless technology biological effects began to rotate out of CDRH, thinning the expertise and leaving only a small contingent of qualified subject matter professionals remaining at the FDA even to the present time.

<sup>21</sup> The industry funded program was initially established as advisory to the CTIA trade association and later, pursuant to recommendations from a U.S. General Accounting Office study of the cell phone issue, was re-constituted as an independent program funded by the wireless industry through a blind trust under the name Wireless Technology Research or WTR.

From 1993 through 1999, the FDA oversaw the work of the independent WTR program, and established and managed an Interagency Working Group (IAWG) that included all relevant government agencies.<sup>22</sup> The IAWG met to receive briefings from the WTR quarterly from 1993 through 1999. The IAWG also held regular meetings with the management of the WTR and the WTR's independent Peer Review Board which was managed through the Harvard University School of Public Health. The FDA was involved in each step of the research and risk management process.<sup>23</sup> As such, the FDA was clearly the point agency and well positioned to provide input into the WTR program regarding research direction and interpretation, peer-review, and public disclosures. The agency was informed at all stages of findings. Such communications, interactions and access to emerging research findings were intended to keep the FDA in a position to promulgate regulations to protect the public as needed based on those independent scientific evaluations.

The work of the WTR was completed in 1999 and delivered to the FDA and the IAWG in 56 separate peer-reviewed reports. The results of the peer-reviewed WTR work were made public in three book publications which acknowledged the support and input provided by the FDA and the IAWG as integral to the process.<sup>24</sup>

One finding from the WTR work was especially troubling to the wireless industry. It showed genetic damage in human blood after 24 hours of exposure across all types of cell phone

---

<sup>22</sup> Members of the IAWG included the FCC, EPA, NIOSH, OSHA, NTIA, NIH, NCI, NTP and other agency representatives invited over the seven-year span of the WTR work. Absent from the IAWG was any formal involvement of the Department of Defense.

<sup>23</sup> The process was comprehensive and included development of the WTR Research Agenda; ongoing review and assessment of existing and emerging scientific literature; development of exposure systems for in vivo and in vitro studies; development and approval of all WTR Requests for Proposals; progress reports on ongoing studies of the WTR; draft reports when analyses were completed; and final reports when submitted to the WTR by contractors.

<sup>24</sup> The three book references for compilations of the WTR work are as follows: "Cell Phones: Invisible Hazards in the Wireless Age" by Dr. George Carlo and Martin Schram, 2001; "Wireless Phones and Health: Scientific Progress" edited by George L. Carlo, 1998; "Wireless Phones and Health II: State of the Science", edited by George L. Carlo, 2001.

signals in use at the time. Following this finding, a Cooperative Research and Development Agreement (CRADA) was entered into by the wireless industry and the FDA. The purpose of this 2001 agreement, which served as another direct input of science to the FDA, was to replicate the genotoxicity studies mentioned above that were conducted through the WTR.<sup>25</sup> Although the results of the CRADA were never published in the peer-reviewed literature by the FDA, the previous original findings of genetic damage by the WTR were published in the peer-reviewed journal *BioElectroMagnetics* in 2002. Those results were, in fact, replicated under the CRADA, thereby confirming genetic damage in human blood from cell phone signals.

Following the delivery of the final WTR reports to the FDA and the IAWG in February 1999, the establishment of the CRADA with the industry trade association CTIA was intended to keep research into the effects of wireless technology moving forward. The CRADA agreement put the FDA in an advisory role with the principal work being overseen by investigators financially supported directly by the CTIA. Following the corroboration of the genetic damage findings of the WTR, the CRADA changed focus from actual research to defining what research needed to be done. Pursuant to this new direction of the CRADA, the FDA's Center for Devices and Radiological Health (CDRH) proposed that the National Toxicology Program (NTP) conduct a study of the potential carcinogenic effects of radio frequency radiation emissions of wireless communication devices as a high priority. This request, conveyed via letter to the NTP on May 19, 1999, prompted the studies on 2G and 3G phones that were only completed and

---

<sup>25</sup> Under a Cooperative Research and Development Agreement, the sponsoring industry provides funding while professionals either within the government agency, the FDA in this case, or contractors overseen by the government agency, conduct the research.

published as Technical Reports in November 2018. This work was completed 19 years after its inception.<sup>26</sup>

## **7. Present Regulatory Ambiguity and Uncertainty**

The FDA has been both an active and passive participant in the building of the scientific database that could be used for assessing risks associated with RF exposures from cell phones, other wireless devices, and connectivity systems.<sup>27</sup> However, there is no evidence in the public record that FDA relied on, consulted, considered, or made use of the information about wireless hazards that is in its files. The agency does not explain how its website came to convey the notion that wireless devices and delivery systems raise no problems of safety when datasets within its files question those conclusions.

Notwithstanding the limited evidentiary record within the FDA, the FCC routinely and emphatically refers to and allows unsubstantiated statements on its official website, implicating the authority of the FDA, such as the following direct quote with respect to cell phones:

“According to the FDA and the World Health Organization (WHO), among other organizations, to date, there is no consistent or credible scientific evidence of health problems caused by the exposure to radio frequency energy emitted by cell phones. The FDA further states that “the weight of the scientific evidence does not support an increase in health risks from radio frequency exposure from cell phone use at or below the radio frequency exposure limits set by the FCC.”<sup>28</sup>

There is no public record that FDA tests or evaluates any electronic performance,

---

<sup>26</sup> See report [here](#). The NTP studies of exposure to RFR used by cell phones (900 MHz) found: clear evidence of an association with tumors in the hearts of male rats; some evidence of an association with tumors in the brains of male rats; some evidence of an association with tumors in the adrenal glands of male rats; significant increases in DNA damage in the frontal cortex of the brains of male mice; significant increases in DNA damage in the blood cells of female mice; significant increases in DNA damage in the hippocampus of male rats.

<sup>27</sup> As such, it is without obvious logic that the cancer assessment document that was released by the FDA in 2019 (and that has underscored FDA public reassurances of safety regarding cell phones and other wireless devices and their carcinogenic potential) included science only published during the years 2008 to 2018. This time frame excluded the majority of the science that the FDA had a direct hand in developing. Further, it is especially confusing as the majority of studies that the FDA had a hand in directing historically, revealed conclusions contrary to inferences derived from the FDA’s most recent public pronouncements.

<sup>28</sup> <https://www.fcc.gov/consumers/guides/wireless-devices-and-health-concerns>

emissions data, or any other data regarding the ever-expanding and densifying information and communications technology products and systems now in use, nor that it has the technical expertise internally to do so since many of its RF technical experts have been rotated out of the agency. Nevertheless, the FCC website states:<sup>29</sup>

“Working closely with federal health and safety agencies, such as the Food and Drug Administration, the FCC has adopted limits for safe exposure to radiofrequency (RF) energy. These limits are given in terms of a unit referred to as the Specific Absorption Rate (SAR), which is a measure of the amount of radio frequency energy absorbed by the body when using a mobile phone. The FCC requires cell phone manufacturers to ensure that their phones comply with these objective limits for safe exposure. Any cell phone at or below these SAR levels (that is, any phone legally sold in the U.S.) is a **‘safe’ phone**, as measured by these standards. The FCC limit for public exposure from cellular telephones is an SAR level of 1.6 watts per kilogram (1.6 W/kg).” (Emphasis added.)

No evidence exists that the FDA or the FCC has used APA-compliant notice and comment processes to adopt officially any safety risk management program for the fleets of modern networks and cell phones that continue to be marketed to the public, and installed in ever-densifying architectures, let alone any of the many other types of RF emission-radiating devices causing human exposure, such as smart meters, OTARD antennas, baby monitors, routers, wearable devices, wireless doorbells, security cameras and other Internet of Things devices. There is no evidence of FDA or FCC pre-market approval studies, post-market monitoring, on-going risk/benefit evaluation, or any other standard regulatory process for RF-emitting devices and systems that are customary for other products and systems that emit RF into workplaces and the general environment. For any of these distinct exposure scenarios from varied devices, there is no evidence or public record of a rigorous and legal APA-compliant rulemaking process.

---

<sup>29</sup> [Specific Absorption Rate \(SAR\) for Cellular Telephones - FCC](#)

There is no evidence that the FCC or the FDA has followed APA procedures in adopting safety standards for RF based on accepted best practices and procedures even followed by the wireless technology providers themselves, nor for comprehensive risk assessment and management. Rather, in a self-reinforcing manner, the FCC and FDA together are citing each other's *ad hoc* website statements that are misleading to the public. It is noteworthy that such statements, including assertions, implications, and innuendos implying that cell phone RF emission levels are legally as well as medically safe, are being challenged in a number of lawsuits.<sup>30</sup>

**a. Children and Teens and Cell Phones**

Figure #2 on the FDA's present website<sup>31</sup> illustrates the FDA's position on cell phone usage by children and teenagers.



Figure 2

---

<sup>30</sup> See [april\\_walker\\_complaintLundy/Wrongful Death.pdf](#)

<sup>31</sup> <https://www.fda.gov/radiation-emitting-products/cell-phones/children-and-teens-and-cell-phones> [Last accessed, December 20, 2021].

The subtext is especially problematic. It states:

“Current scientific evidence does not show a danger to any users of cell phones from radio frequency (RF) energy, including children and teenagers. There are also simple steps that anyone, including children and teenagers, can take if they would like to reduce RF exposure.”

This language raises several questions the FDA must address:

- Does the FDA mean to imply that cell phone use in this manner is safe? If the agency’s position is that such use is in fact safe, the FDA must provide appropriate documentation and not avoid the question by claiming that undefined “scientific evidence” does not show “danger.”
- The FDA appears to be making a clear statement concerning the safe use of cell phones by children and teenagers. But then the FDA continues by citing the European [MOBI-KIDS study](#), where early indication seems to suggest real concerns on how

children and teens are currently using cell phones. From the FDA’s website:

“A large epidemiological study of the effects of cell phones in young adults aged between 10 and 24 was completed across 14 countries in Europe (the MOBI-KIDS study). Although the study was completed in 2016, the results have not yet been published. As with all other information, the FDA will continue to monitor scientific information and assess the results of this study as it becomes available.”

- The FDA’s apparent position on exposure to children runs counter to the DC Circuit Court’s ruling in [EHT v FCC](#) cited previously:

“Under this highly deferential standard of review, we find the Commission’s order arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission’s current limits may cause negative health effects unrelated to cancer. (As we explain below, we find that the Commission offered an adequate explanation for its determination that exposure to RF radiation at levels below the Commission’s current limits does not cause cancer.) That failure undermines the Commission’s conclusions regarding the adequacy of its testing procedures, particularly as they relate to children, and its conclusions regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the implications

of technological developments that have occurred since 1996, all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects. Accordingly, we find those conclusions arbitrary and capricious as well.” (pg. 9-10)

“Second, the Commission equally failed to provide a reasoned explanation for brushing off record evidence addressing non-cancer-related health effects arising from the impact of RF radiation on children... In dismissing those concerns, the Commission again relied on a conclusory statement from the FDA that “[t]he scientific evidence does not show a danger to any users of cell phones from RF exposure, including children and teenagers”... So once again, the Commission’s failure to provide a reasoned or even relevant explanation of its position that RF radiation below the current limits does not cause health problems unrelated to cancer renders its explanation as to the effect of RF radiation on children arbitrary and capricious.” (pg. 20-21)

#### **b. Administrative Guidance Does Not Constitute Official Policy**

The present confusion regarding official FDA policy, safety standards, and enforcement regarding cell phones and other wireless devices and systems is compounded by published Guidelines and other pronouncements, in which the FCC and FDA are referencing each other and creating the public impression of official imprimatur. One example is the October 23, 2015 FCC Guideline on “RF Exposure Procedures And Equipment Authorization Policies For Mobile And Portable Devices”.<sup>32</sup>

As a matter of administrative law, it is questionable that administrative guidance can constitute official policy. Clearly the full strictures of the Administrative Procedure Act should apply, especially when such guidance presents significant dangers to the public. (See: Richard A. Epstein, [The Role Of Guidances In Modern Administrative Procedure: The Case For De Novo Review](#).) The FDA follows the procedures required by its "Good Guidance Practice" regulation to issue FDA guidance. FDA guidance describes the agency’s current thinking on a regulatory

---

<sup>32</sup>

[https://apps.fcc.gov/kdb/GetAttachment.html?id=f8lQgJxTTL5y0oRi0cpAuA%3D%3D&desc=447498%20D01%20General%20RF%20Exposure%20Guidance%20v06&tracking\\_number=20676](https://apps.fcc.gov/kdb/GetAttachment.html?id=f8lQgJxTTL5y0oRi0cpAuA%3D%3D&desc=447498%20D01%20General%20RF%20Exposure%20Guidance%20v06&tracking_number=20676)

issue. The FDA website explicitly states: [“Guidance is not legally binding on the public or FDA.”](#) The Good Guidance Practice regulation can be found at [21 CFR 10.115](#).

The FCC and FDA have for a long time been cross-referencing, implying and creating the public impression that such Guidance is official federal government policy, while at the same time publicly stating that it has no legal effect.<sup>33</sup> This state of dangerous ambiguity is especially deserving of the critical public and judicial review that Professor Epstein is recommending.

### **Impact of the FDA’s Ambiguity on Medical Practice**

The present state of regulatory uncertainty is also confusing to physicians, other medical professionals, and clinicians who are making medical decisions for patients based on the misguided premise that the primary health authorities in the country, HHS and the FDA, have definitively spoken on the issue of RF radiation safety. Given its stature, the pictorial endorsement evident in Figures 1 and 2 above is tantamount to offering a medical opinion that use of cell phones in this manner is safe. While HHS and the FDA fail to provide reasoned public safeguards, other countries are taking action to remedy this exact problem. For example, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has been sufficiently concerned about misleading the medical community that the agency has published a disclaimer on its website to the effect that no physician can construe or rely upon any website statement as tendering medical advice or sanctioning any medical procedure, decision making, or treatment.<sup>34</sup>

Unlike ARPANSA, the FDA has not issued any such disclaimer, or any other guidance to practicing clinicians and health professionals. Many physicians and health officials in the U.S.

---

<sup>33</sup> “Guidance is not legally binding on the public or FDA.” [What is the difference between the Federal Food, Drug, and Cosmetic Act \(FD&C Act\), FDA regulations, and FDA guidance?](#)

<sup>34</sup> See [ARPANSA's Disclaimer](#).

are currently not considering RF effects in differential diagnoses and treatment regimens, believing the FDA has already pronounced on the safety of RF exposure. These health practitioners and officials have been led to believe that RF exposure is not a clinically relevant concern. The scientific literature is replete with peer-reviewed studies suggesting just the opposite. This misplaced reliance on the expectation that the FDA has an integral role in providing useful information to clinicians about RF exposures of patients is confounding to clinicians, and dangerous to patients.

#### **8. FDA Dismissal of Its Own National Toxicology Program (NTP) Study**

Without any APA-compliant process evident in the FDA's public record as justification, FDA official, Dr. Jeffrey Shuren, has publicly discounted, misrepresented, and dismissed the conclusions of the ten-year \$30 million taxpayer-funded study by the National Toxicology Program (NTP) originally nominated by the FDA pursuant to the 1999 CRADA with CTIA. The NTP study concluded that there is clear evidence of carcinogenicity from RF exposure in rats.<sup>35</sup> Dr. Shuren, the present Director of the FDA's Center for Devices and Radiological Health, has inexplicably continued to trivialize, discount, and distort the actual findings of the NTP Report, and to permit other federal agencies, most significantly the FCC, to rely on his statements that were not supported by an APA-compliant notice and comment rulemaking process at the FDA, appear to be scientifically unsupported, and which are the basis for the August 13, 2021 rebuke by the DC Court of Appeals in *EHT et al. v. FCC*.

Dr. Shuren has issued the following inaccurate and misleading statement, which the FCC and other federal agencies are now publicly recognizing as official FDA policy:

---

<sup>35</sup> In any other regulatory process where carcinogenicity in animal models specifically designed to predict human cancer risk show positive results, regulatory enforcement actions to mitigate any risks would be mandatory.

“The conclusions relating to public health risks reached by the FDA’s scientists differ from those of the NTP, and the FDA determination is that the study did not demonstrate that cell phones cause cancer.”<sup>36</sup>

This FDA official’s “conclusions” were not peer-reviewed, otherwise challenged scientifically, or put through any rigorous review process, as would be required by the APA in any credibly authorized process for setting standards and regulations. In publishing unsupported opinion without using an APA-compliant rulemaking and policymaking process, the FDA has effectively shifted the burden of proof of ensuring safety or determining adverse risk to the public away from the industry manufacturers and signal carriers to the consumers. By his words and pronouncements, Dr. Shuren is misleading the public into believing “the study (sic) did not demonstrate that cell phones cause cancer.” The Imminent Hazard rules previously cited state clearly:

“The occurrence of the final anticipated injury is not essential to establish that an Imminent Hazard of such occurrence exists.”

Without following APA requirements for establishing safety standards for RF, it is impossible for the public or other interested parties to alert themselves to the possibility of danger from RF, as suggested by the NTP study.<sup>37</sup> It is noteworthy that had the NTP results been gleaned through the APA-accepted methods in pre-market safety testing, the rebuttable presumption of a cancer risk would be operative and the burden on the industry purveyors of the technology to prove safety. In the present post-market situation, if after many more studies are conducted, the FDA ultimately concedes that the overwhelming preponderance of the evidence demonstrates that cell phones actually cause cancer, a possibility not ruled out by Dr. Shuren’s

---

<sup>36</sup> [Scientific Evidence for Cell Phone Safety | FDA.](#)

<sup>37</sup> See e.g., [Turin Court of Appeal Verdict 3-12-19](#) (translated from Italian).

extra-official opinionizing, the damage done while waiting for such a determination to be made will be irreversible. The lives lost will be irretrievable.

## **9. Detrimental reliance on FDA statements regarding wireless technology safety**

### **c. How reliance is undermining RF monitoring and enforcement**

Reliance by the cell tower providers, site developers, installers, and management companies, as well as local municipalities and counties across the country on the FCC's own unsubstantiated and conclusory statements is supporting self-justifying lax and indifferent monitoring, and virtually no enforcement by the FCC itself of its own aggregate thermal guidelines. As an illustrative example, a detailed radiofrequency (RF) emission field study was conducted by Cardinal Communications on November 3, 2021 at an apartment building in Washington, D.C. where mobile network base stations are operating on and near the premises. The report's conclusion is, using a conservative analysis, that the Federal Communications Commission (FCC) Human RF exposure guidelines **appear to be regularly exceeded in a publicly accessible area**. (See Declaration of Sally Coxe which includes an Executive Summary of the Report.)

### **d. Cascading Reliance from Authoritative Organizations**

Many trusted federal and state agencies, public service organizations, and health care professional associations, each and collectively with very broad reach into the U.S. population, rely on advice emanating from the FDA's pronounced authority on RF safety.<sup>38</sup> Such reliance is based on both the credibility traditionally accorded to the FDA, and the FDA's own representations and implications that convey the impression that someone — the FDA, or if not the FDA, most certainly its closely allied agency the FCC — is effectively monitoring the safety

---

<sup>38</sup> It is noteworthy that the wireless industry boasts of more than 300 million wireless phones in operation daily in the U.S. Such facts suggest that the entire U.S. population is potentially being reached.

of wireless technology. But no federal agency, or group of federal agencies, actually is. The following are prominent examples that detail the potential reach of the misinformation attributed to the FDA regarding RF and portend the potential scope of the Imminent Hazard now befalling the U.S. population:

**The American Cancer Society (ACS).** The ACS, a nationwide community-based voluntary health organization dedicated to eliminating cancer as a major health problem, quotes the FDA on the ACS website as the nation’s safety authority with respect to wireless technology.<sup>39</sup>

Example reference to FDA’s authority:

“More recently, the US Food and Drug Administration (FDA) issued a technical report based on studies published between 2008 and 2018, as well as national trends in cancer rates. The report concluded: “Based on the studies that are described in detail in this report, there is insufficient evidence to support a causal association between radiofrequency radiation (RFR) exposure and [tumor formation].”

Neither the FDA nor the ACS pointed out that there is insufficient evidence to rule out a causal association between RF exposure and tumor formation, as was found in the NTP study.

**American Heart Association (AHA).** The AHA is a nonprofit organization in the United States that funds cardiovascular disease medical research, educates consumers on healthy living, and fosters appropriate cardiac care in an effort to reduce disability and deaths caused by cardiovascular disease and stroke. With respect to wireless technology safety, the AHA cites the FDA’s expertise and authority on AHA website.<sup>40</sup>

Example reference to FDA’s authority:

---

<sup>39</sup> <https://www.cancer.org/cancer/cancer-causes/radiation-exposure/cellular-phones.html>

<sup>40</sup> <https://newsroom.heart.org/news/magnets-in-iphoneR-series-12-can-interfere-with-some-implanted-cardiac-devices>

“On May 13, 2021, the U.S. Food and Drug Administration issued an update regarding magnet technology in portable electronics such as cell phones and smart watches that have magnets: the FDA recommends keeping all electronic devices with magnets at least six inches away from implanted medical devices, such as pacemakers and defibrillators. Apple offers the same guidance regarding its MagSafe products.”

**Centers for Disease Control and Prevention (CDCP).** The Centers for Disease Control and Prevention is a federal public health agency under the Department of Health and Human Services whose function is to “protect America from health, safety and security threats, both foreign and in the U.S.” With respect to wireless technology safety, the CDCP defer to the FDA, the FCC, and the WHO as the sources in their “Frequently Asked Questions About Cell Phones and Your Health” section on its website.<sup>41</sup>

**Federal Communications Commission (FCC).** The FCC describes itself on its website as a regulator of interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. An independent U.S. government agency overseen by Congress, the Commission is the federal agency responsible for implementing and enforcing America’s communications law and regulations. However, with respect to wireless technology safety, it defers to the FDA.<sup>42</sup>

Example references to FDA’s authority:

“According to the FDA and the World Health Organization (WHO), among other organizations, to date, there is no consistent or credible scientific evidence of health problems caused by the exposure to radio frequency energy emitted by cell phones. The FDA further states that ‘the weight of the scientific evidence does not support an increase in health risks from radio frequency exposure from cell phone use at or below the radio frequency exposure limits set by the FCC.’<sup>43</sup>

---

<sup>41</sup> [https://www.cdc.gov/nceh/radiation/cell\\_phones\\_faq.html](https://www.cdc.gov/nceh/radiation/cell_phones_faq.html)

<sup>42</sup> <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>.

<sup>43</sup> See [fda.gov/radiation-emitting-products/cell-phones/scientific-evidence-cell-phone-safety](https://www.fda.gov/radiation-emitting-products/cell-phones/scientific-evidence-cell-phone-safety).

“The FDA is, however, the lead federal health agency in monitoring the latest research developments and advising other agencies with respect to the safety of RF-emitting products used by the public, such as cellular and PCS phones.”<sup>44</sup>

**National Cancer Institute (NCI).** As the federal government's principal agency for cancer research and training, NCI leads, conducts, and supports cancer research across the nation to advance scientific knowledge and help all people live longer, healthier lives. Nonetheless, with respect to wireless technology and cancer, the NCI defers to the FDA.<sup>45</sup>

Example reference to FDA’s authority:

“The US Food and Drug Administration (FDA) notes that studies reporting biological changes associated with radiofrequency radiation have failed to be replicated and that the majority of human epidemiologic studies have failed to show a relationship between exposure to radiofrequency radiation from cell phones and health problems. FDA, which originally nominated this exposure for review by the NTP in 1999, issued a statement on the draft NTP reports released in February 2018, saying ‘based on this current information, we believe the current safety limits for cell phones are acceptable for protecting the public health.’”<sup>46</sup>

**Oregon Health Authority (OHA).** The Oregon Health Authority is overseen by the Oregon Health Policy Board (OHPB), a nine-member citizen board. OHA is responsible for the many of the state’s major health systems including the Medicaid program known as the Oregon Health Plan, the Oregon State Hospital, public health, behavioral health, and the Public Employees Benefit Board and Oregon Educators Benefit Board. Its wireless technology health risks report defers to the FDA among others as the authority on wireless technology health effects.<sup>47</sup>

Example reference to FDA’s authority:

“Overall, the available epidemiology research examining RF health effects does not provide sufficient evidence to conclude that RF exposure in school settings is associated with adverse health effects. However, as mentioned above, more

---

<sup>44</sup> <https://www.fcc.gov/engineering-technology/electromagnetic-compatibility-division/radio-frequency-safety/faq/rf-safety>

<sup>45</sup> <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet>.

<sup>46</sup> Ibid.

<sup>47</sup> <https://www.oregon.gov/oha/ERD/Documents/SB283-Wireless-Tech-Health-Risks.pdf>.

research is needed. This is in line with conclusions on RF exposures and health by the U.S. Food & Drug Administration, the Centers for Disease Control and Prevention, the National Cancer Institute and other agencies that work to protect population health.”

Every one of these examples creates the erroneous impression that the FDA has officially established safety standards after applying widely accepted risk analysis, monitoring and evaluation standards, and doing so using APA standard regulatory processes, to all RF-emitting devices, when it has not applied such standard processes to many RF-emitting devices.

**e. Media Reliance on FCC/FDA Misleading and False Claims**

The mainstream media have in many cases unquestioningly accepted and disseminated to the public the misleading and false claims made by the FDA. Countless media reports, precipitated by new studies and other events, carry the misleading message that the FDA is the lead agency on the safety of wireless technology with definitive policy. This is not the case and the false impression continues to be propagated far and wide through the national media. This creates an Imminent Hazard through the very broad dissemination of false and misleading information about nonexistent FDA standards for devices emitting RF radiation.

Recent media coverage and reference to the FDA’s statements about cell phone safety centers around two issues:

1. The release of results from a National Toxicology Program study on cellular radiation exposure.
2. Possible cell phone interference with certain implanted medical devices.

Appendix 4 documents the media’s reliance on the FDA for information about cell phone safety which reporters include in news stories widely seen by the public. Any declaration of an Imminent Hazard should be disseminated at least as widely.

#### **f. Unsafe Schools and Insecure Learning Environments**

The federal government and many states have strong policies requiring safe learning environments for children and teachers in schools.<sup>48</sup> The FCC's and FDA's misleading and false claims about the FDA's official policy on RF safety is powerfully and measurably undermining a national priority that has bi-partisan political support and a broad national consensus on its importance. On the local level, thousands of school officials, parents, and children are being directly affected in the following ways, among others.

- **Failure to Connect Symptoms with RF Exposure.** Parents, teachers, school administrators and nurses are failing to connect the dots when children are evidencing serious acute symptoms, well documented in the scientific and clinical literature to be correlated with RF exposure, right before their eyes: headaches, dizziness, nausea, anxiety, brain fog and cognitive impairment. False assurances of safety by the federal government are creating an atmosphere of disempowerment, such that parents and school administrators do not even recognize, much less take action when their own children are possibly being injured by RF-emitting devices and systems.
- **False Assumptions.** School administrators and their lawyers, parents, and teachers are assuming that continuous, cumulative, and aggregate exposure of children in their care from RF is safe, often because wireless company representatives that have an interest in selling these products are telling them so. These telecom companies are citing scientific "evidence" confirmed by the FDA that RF radiation from these devices and systems pose no serious risk of harm to children and teachers.

---

<sup>48</sup> See e.g. [September 30, 2021 — Senators Markey and Blumenthal, Rep. Castor Reintroduce Legislation to Protect Children and Teens from Online Manipulation and Harm](#)

- **Official FCC and FDA Policy.** School administrators, parents, and teachers are assuming that the FCC and the FDA have adopted an official policy on RF safety using an APA-compliant rulemaking backed by competent scientific and medical analysis, when there is no convincing evidence that these agencies have done any such thing.
- **Hands Are Tied.** School officials, faced with extreme pressure from parents to “modernize” their schools, and with funding from the government, are implementing new wireless technologies, using the FDA and FCC as shields against any concerns about health. Moreover, school administrators believe they have no choice, literally that their “hands are legally tied,” because they trust that the FCC and FDA have spoken, and that the Telecommunications Act of 1996 preempts basic civil rights and remedies.

### **C. Supplemental Legal Authority**

Prior sections of this Petition have cited primary legal authority for the HSS Secretary immediately to correct an Imminent Hazard based on misleading and false claims that are attributed to the FDA. The following are supplemental supporting authorities for the Petition.

#### **10. Performance Standards for Radiative Products (21 U.S. Code § 360kk)**

The Secretary of HHS, in close coordination with the FDA Commissioner, has a clear affirmative statutory obligation to establish performance standards for radiative devices. This Petition alleges that the Secretary and Commissioner are directly or inadvertently allowing the misleading belief that the FDA has in fact issued such regulations, when it has not. The situation must be immediately corrected to avoid further increasing harms.

Section § 360kk requires the HHS Secretary to promulgate performance standards for radiative devices. This has not happened, at least for many RF-emitting devices and systems.

Section § 360kk begins:

**(a) Promulgation of regulations**

(1) The Secretary shall by regulation prescribe performance standards for electronic products to control the emission of electronic product radiation from such products if he determines that such standards are necessary for the protection of the public health and safety. Such standards may include provisions for the testing of such products and the measurement of their electronic product radiation emissions, may require the attachment of warning signs and labels, and may require the provision of instructions for the installation, operation, and use of such products. Such standards may be prescribed from time to time whenever such determinations are made, but the first of such standards shall be prescribed prior to January 1, 1970. In the development of such standards, the Secretary shall consult with Federal and State departments and agencies having related responsibilities or interests and with appropriate professional organizations and interested persons, including representatives of industries and labor organizations which would be affected by such standards, and shall give consideration to—

(A) the latest available scientific and medical data in the field of electronic product radiation;

(B) the standards currently recommended by (i) other Federal agencies having responsibilities relating to the control and measurement of electronic product radiation, and (ii) public or private groups having an expertise in the field of electronic product radiation;

**11. *Environmental Health Trust et al. v. FCC***

The HHS Secretary has exclusive non-delegable authority to determine and to declare an Imminent Hazard to the public. In the present case, the Imminent Hazard is presented by the misleading and false claims allowed and encouraged by the FDA. Untold numbers of Americans are bearing the consequences of widespread actions across the country made in unquestioning reliance, and almost universal acceptance of this false premise that continues unchallenged by the HHS and the FDA.

On August 13, 2021 the DC Circuit Court of Appeals in *Environmental Health Trust v. FCC* made several rulings that are critical to this Imminent Hazard Petition. The central questions in the *Environmental Health Trust v. FCC* case were:

1) How much diligence under the Administrative Procedure Act must an administrative agency, in this case the FCC and FDA, dedicate in assessing critical questions of national health and wellbeing?

2) What record must an agency produce as evidence that it seriously addressed the risks involved?

3) What deference should the federal courts give to the decisions reached by that agency?

The central findings of the case that are most pertinent to the question of Imminent Hazard are:

- Not only the FCC, but also the FDA acted arbitrarily and capriciously, in violation of the Administrative Procedure Act, by allowing and encouraging the perception, without any evidentiary basis, that it had concluded that RF exposure below the current FCC thermal guidelines for the general public, in particular children, was safe.
- And by inference, no one can take comfort or should rely on the converse proposition — that RF exposure below the present FCC thermal guideline is safe — at least regarding illnesses and other adverse effects from RF exposure outside cancer, which the Court treated as a special and exceptional case. Because the majority opinion is directly relevant to the question of the Secretary’s declaration of an Imminent Hazard it is excerpted in full here (pp. 10-15 of [EHT v FCC](#)).

“That failure undermines the Commission’s conclusions regarding the adequacy of its testing procedures, particularly as they relate to children, and its conclusions

regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the implications of technological developments that have occurred since 1996, all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects. Accordingly, we find those conclusions arbitrary and capricious as well. Finally, we find the Commission's order arbitrary and capricious in its complete failure to respond to comments concerning environmental harm caused by RF radiation." (page 10)

"We do not agree that these statements provide a reasoned explanation for the Commission's decision to terminate its notice of inquiry. Rather, we find them to be of the conclusory variety that we have previously rejected as insufficient to sustain an agency's refusal to initiate a rulemaking."

"The statements from the FDA on which the Commission's order relies are practically identical to the Secretary's statement in *American Horse* and the Commission's statement in *American Radio*. They explain that the FDA has reviewed certain information—here, "all," "the weight," or "the totality" of "scientific evidence." And they state the FDA's conclusion that, in light of that information, exposure to RF radiation at levels below the Commission's current limits does not cause harmful health effects. But they offer "no articulation of the factual . . . bases" for the FDA's conclusion. *Am. Horse*, 812 F.2d at 6 (internal quotation marks omitted). In other words, they do not explain why the FDA determined, despite the studies and comments that Petitioners cite, that exposure to RF radiation at levels below the Commission's current limits does not cause harmful health effects. Such conclusory statements "cannot substitute for a reasoned explanation," for they provide "neither assurance that the [FDA] considered the relevant factors nor [do they reveal] a discernable path to which the court may defer." *Am. Radio*, 524 F.3d at 241. They instead represent a failure by the FDA to address the implication of Petitioners' studies: The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate."

"When repeated by the FCC, the FDA's conclusory statements still do not substitute for the reasoned explanation that the APA requires. It is the Commission's responsibility to regulate radio communications, 47 U.S.C. § 301, and devices that emit RF radiation and interfere with radio communications, *id.* § 302a(a), and to do so in the public interest, including in regard to public health, *Banzhaf v. FCC*, 405 F.2d 1082, 1096 (D.C. Cir. 1968). Even the FCC itself recognizes this. See 2019 Order, 34 FCC Rcd. at 11,689 ('The Commission has the responsibility to set standards for RF emissions'); 2013 Notice of Inquiry, 28 FCC Rcd. at 3,571 (explaining that the Commission opened the notice of inquiry "to ensure [it] [was] meeting [its] regulatory responsibilities" and that it would 'work closely with and rely heavily—but not exclusively—on the guidance of other federal agencies with expertise in the health field' in order to "fully discharge [its] regulatory responsibility") (Emphasis added.). And the APA requires that the FCC's decisions

concerning the regulation of radio communications and devices be reasoned. The FCC’s purported reasoning in this case is that it chose to rely on the FDA’s evaluation of the studies in the record. Absent explanation from the FDA as to how and why it reached its conclusions regarding those studies, however, we have no basis on which to review the reasonableness of the FCC’s decision to adopt the FDA’s conclusions. Ultimately, the FCC’s order remains bereft of any explanation as to why, in light of the studies in the record, its guidelines remain adequate. The FCC may turn to the FDA to provide such an explanation, but if the FDA fails to do so, as it did in this case, the FCC must turn elsewhere or provide its own explanation. Were the APA to require less, our very deferential review would become nothing more than a rubber stamp.”<sup>49</sup>

The very malady the DC Circuit in *EHT v. FCC* is seeking to correct is compounded *each day* that the FDA fails to correct the misrepresentations and false claims surrounding its uncertain policy on RF radiation exposure.

**g. DC Circuit Court of Appeals Ruling on Non-thermal Biological Effects of RF Radiation on Humans, Excluding Cancer**

The DC Circuit Court of Appeals’ ruling and explanatory obiter opinion is crystal clear on the non-thermal biological effects of RF radiation on humans. It excluded cancer, in which it allowed that the FCC’s treatment of cancer met minimum APA requirements. The Court required special vigilance, as noted above, regarding RF exposure of children.

“Under this highly deferential standard of review, we find the Commission’s order arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission’s current limits may cause negative health effects unrelated to cancer.” (pg. 9)

“The statements from the FDA on which the Commission’s order relies are practically identical to the Secretary’s statement in *American Horse* and the Commission’s statement in *American Radio*. They explain that the FDA has reviewed certain information—here, “all,” “the weight,” or “the totality” of “scientific evidence.” And they state the FDA’s conclusion that, in light of that information, exposure to RF radiation at levels below the Commission’s current limits does not cause harmful health effects. But they offer “no articulation of the factual . . . bases” for the FDA’s conclusion. *Am. Horse*, 812 F.2d at 6 (internal

---

<sup>49</sup> The EHT case has strong support in *Keetoowah Band of Cherokee Indians v. FCC*. *United Keetoowah Band of Cherokee Indians v. FCC*, No. 18-1129, 2019 WL 3756373 (D.C. Cir Aug. 9, 2019) <https://drive.google.com/file/d/1hG0Br4wnOWonq-f3XYoVLQLUwbj8pIlu/view?usp=sharing>

quotation marks omitted). In other words, they do not explain why the FDA determined, despite the studies and comments that Petitioners cite, that exposure to RF radiation at levels below the Commission's current limits does not cause harmful health effects. Such conclusory statements "cannot substitute for a reasoned explanation," for they provide "neither assurance that the [FDA] considered the relevant factors nor [do they reveal] a discernable path to which the court may defer." Am. Radio, 524 F.3d at 241. They instead represent a failure by the FDA to address the implication of Petitioners' studies: The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate." (pg. 14)

"The Commission's failure to provide a reasoned explanation for its determination that exposure to RF radiation at levels below its current limits does not cause negative health effects unrelated to cancer renders the order arbitrary and capricious in three additional respects." (pg. 19)

The DC Court's opinion alone provides a mandate for the FDA to address the widespread misconceptions and actions taken in its name that are the very opposite of the central ruling in *EHT v. FCC*.

#### **D. Declarations and Findings**

The Declarations in Appendices 2 and 3 attest to the cost—the Imminent Hazard—that results when misinformation and disinformation on a fundamental public health policy are permitted to continue unchecked. Taken together, these Declarations poignantly express what it is like to have one's life fundamentally altered by RF exposure. These calamities could have been avoided, but for the false sense of security that the FDA is actively monitoring RF safety, which it is not. The Declarations include the warnings of local organizations that are desperately trying to protect vulnerable populations like newborn babies, school children, and people with frailties, illnesses or compromised immune systems, as well as critical services such as firefighters living in fire stations next to macro cell towers, who are being placed at risk as a result of reliance by city councils or fire departments on misleading and false claims attributed to current FCC/FDA policy that chronic RF exposure is safe in all circumstances. At a minimum,

the failure of HHS and the FDA to clarify that it has not established safety standards for RF emissions makes it impossible for individuals who suspect that RF emissions might be causing them harm to evaluate the situation, and either rule out the possibility of harm, or make clear that the harm does, in fact, exist.

Also included are statements by leading scientists, physicians, and other domain experts who are familiar with the voluminous scientific and clinical record, documented by independent, non-conflicted experts, that such continuous, aggregate, and cumulative RF exposure can, in fact, be unsafe. Finally, one Declaration from a former resident on Kirtland Air Force Base highlights how a national health and environmental hazard could well turn into a national security risk. Fighter pilots and others who are responsible for, or custodians of, weapons of mass destruction may be exposed to RF radiation emitted from smart meters located near their bedrooms in military personnel housing. This low-probability/high-damage contingency must not be summarily dismissed.

#### **E. Conclusion**

The HHS Secretary must immediately declare an Imminent Hazard to prevent further harm to public health based on misleading and false claims being attributed to the HHS and FDA regarding its current RF radiation exposure policy, safety standards, and regulations; and adopt an affirmative process to directly notify all public and private sector groups impacted by the Imminent Hazard of such action, such that they can begin to take steps to protect their interests regarding exposures to RF.

## VI. ENVIRONMENTAL IMPACT

The [FDA website states](#): Environmental impact--This information is generally required if the petition requests approval of food or color additives, drugs, biological products, animal drugs, or certain medical devices, or for a food to be categorized as GRAS (Generally Recognized As Safe). Procedures for preparing environmental impact statements can be found in [Title 21, Part 25 of the Code of Federal Regulations](#). **If an environmental impact statement is not required, petitions should include a statement to that effect.** [Emphasis added.]

As the instant Petition does not request approval of any of the above, no environmental impact statement is required as a condition for filing this Petition.

## VII. ECONOMIC IMPACT

### A. Unassessed National Health Costs

As part of the FDA's NEPA analysis, the agency, in collaboration with Council on Environmental Quality (CEQ) and other concerned federal agencies, must adopt a whole systems risk analysis of environmental and health impacts of its present policy relating to RF radiation emitted from electronic devices and consequent human exposures.

The present uncertainty over the FDA's official policy regarding RF exposure safety, as this Petition urges, is creating an Imminent Hazard that entails huge economic consequences. By allowing and actively encouraging the misperception and false claims that the FDA has in fact adopted an official policy that RF exposure is safe is implicitly also creating the additional false impression throughout society that the harms from exposure to RF radiation are negligible and costless. Nothing can be farther from the truth.

## **B. Economic Costs of the FCC/FDA's Regulatory Subsidy to the Wireless Industry**

The true economic costs to the American public of the uncompensated and systemic environmental and health damage could likely exceed billions of dollars, if not over \$1 trillion annually. The official policy of the FCC and FDA to allow the wireless industry to escape internalizing these costs, but rather to pass them on to the general public, constitutes a massive regulatory subsidy that has not been the subject of any Congressional oversight hearings or official scrutiny (and instead effectively institutes a 'Public Pays Principle'). The FDA and FCC are missing a major opportunity to encourage the wireless manufacturers to develop and market innovative products that compete on safety.

One white paper that addresses the challenges of quantifying the human health costs of RF exposure is Dr. David Carpenter's article.<sup>50</sup> This study, however, does not address the additional costs, including:

- Costs Associated with Electromagnetic Hypersensitivity (EHS),
- National Health Costs Related to Major Chronic Illnesses and Disabilities (including cancer, heart disease, stroke, neurodegenerative disease, and diabetes),
- National Health Costs Related to RF Radiation Effects on Children,
- National Health Costs of RF Radiation Effects on Economically Disadvantaged Populations,
- National Costs of RF Induced Sleep Deprivation,
- National Costs of Substance Abuse, Alcoholism, and Mental Disease Linked to Chronic and Cumulative RF Radiation Exposure,

---

<sup>50</sup> See generally: 2010 [Human Health Effects of EMFs: The Cost of Doing Nothing](#), David O. Carpenter, MD. Institute for Health and the Environment, University at Albany, Rensselaer, NY 12144-3456.

- National Costs of Declining Productivity from RF Radiation Exposure in the Workplace.

## VIII. CERTIFICATION

The undersigned certifies, that, to the best knowledge and belief of the undersigned, this petition includes all information and views on which the petition relies, and that it includes representative data and information known to the petitioner which are unfavorable to the petition. Respectfully submitted on behalf of all Petitioners,



Douglas A. Wood  
Founder and National Director, Americans for Responsible Technology

Counsel for the Petitioners:

/s/ James S. Turner

James S. Turner

/s/ Julian Gresser

Julian Gresser

/s/ Joseph Sandri

Joseph Sandri

## IX. IDENTIFYING INFORMATION

James S. Turner  
Swankin & Turner  
BroadBand International Legal  
Action Network (BBILAN)  
The BALANCE GROUP  
5614 Connecticut Ave., NW  
#339  
Washington, DC 20015  
jim@swankin-turner.com

Julian Gresser  
Of Counsel Swankin & Turner  
BroadBand International Legal  
Action Network (BBILAN)  
THE BALANCE GROUP  
P.O. Box 30397  
Santa Barbara, CA 93130  
juliangresser77@gmail.com  
Office: 805-563-3226

Joseph M. Sandri  
THE BALANCE GROUP  
Thought Delivery Systems, Inc.  
8070 Georgia Avenue  
Suite 301  
Silver Spring, MD 20910  
joe@thoughtdelivery.com  
Office: 202-223-1028

Mobile: 202-462-8800

**X. APPENDIX 1: Petitioners' Proposed Rule and Subrules Relating to a Declaration of Imminent Hazard to Public Health — Section (i) et seq. pg. 70 (Effective January 1, 2022)**

**21 U.S. Code § 360kk - Performance standards for electronic products**

**(a) PROMULGATION OF REGULATIONS**

(1) The **Secretary** shall by regulation prescribe performance standards for **electronic products** to control the emission of **electronic product radiation** from such products if he determines that such standards are necessary for the protection of the public health and safety. Such standards may include provisions for the testing of such products and the measurement of their **electronic product radiation** emissions, may require the attachment of warning signs and **labels**, and may require the provision of instructions for the installation, operation, and use of such products. Such standards may be prescribed from time to time whenever such determinations are made, but the first of such standards shall be prescribed prior to January 1, 1970. In the development of such standards, the **Secretary** shall consult with Federal and **State** departments and agencies having related responsibilities or interests and with appropriate professional organizations and interested **persons**, including representatives of industries and labor organizations which would be affected by such standards, and shall give consideration to—

**(A)**

the latest available scientific and medical data in the field of **electronic product radiation**;

**(B)**

the standards currently recommended by (i) other Federal agencies having responsibilities relating to the control and measurement of **electronic product radiation**, and (ii) public or private groups having an expertise in the field of **electronic product radiation**;

**(C)**

the reasonableness and technical feasibility of such standards as applied to a particular **electronic product**;

**(D)**

the adaptability of such standards to the need for uniformity and reliability of testing and measuring procedures and equipment; and

**(E)**

in the case of a component, or accessory described in paragraph (2)(B) of **section 360hh of this title**, the performance of such article in the manufactured or assembled product for which it is designed.

**(2)**

The **Secretary** may prescribe different and individual performance standards, to the extent appropriate and feasible, for different **electronic products** so as to recognize their different operating characteristics and uses.

**(3)**

The performance standards prescribed under this section shall not apply to any **electronic product** which is intended solely for export if (A) such product and the outside of any shipping container used in the export of such product are labeled or tagged to show that such product is intended for export, and (B) such product meets all the applicable requirements of the country to which such product is intended for export.

**(4)**

The **Secretary** may by regulation amend or revoke any performance standard prescribed under this section.

(5)

The [Secretary](#) may exempt from the provisions of this section any [electronic product](#) intended for use by [departments](#) or agencies of the United [States](#) provided such [department](#) or agency has prescribed procurement specifications governing emissions of [electronic product radiation](#) and provided further that such product is of a type used solely or predominantly by [departments](#) or agencies of the United [States](#).

**(b)ADMINISTRATIVE PROCEDURE**

The provisions of subchapter II of chapter 5 of title 5 (relating to the administrative procedure for rulemaking), and of chapter 7 of title 5 (relating to judicial review), shall apply with respect to any regulation prescribing, amending, or revoking any standard prescribed under this section.

**(c)PUBLICATION IN FEDERAL REGISTER**

Each regulation prescribing, amending, or revoking a standard shall specify the date on which it shall take effect which, in the case of any regulation prescribing, or amending any standard, may not be sooner than one year or not later than two years after the date on which such regulation is issued, unless the [Secretary](#) finds, for good cause shown, that an earlier or later effective date is in the public interest and publishes in the Federal Register his reason for such finding, in which case such earlier or later date shall apply.

**(d)JUDICIAL REVIEW**

(1)

In a case of actual controversy as to the validity of any regulation issued under this section prescribing, amending, or revoking a performance standard, any [person](#) who will be adversely affected by such regulation when it is effective may at any time prior to the sixtieth day after such regulation is issued file a petition with the United [States](#) court of appeals for the circuit wherein such [person](#) resides or has his principal place of business, for a judicial review of such regulation. A copy of the petition shall be forthwith transmitted by the clerk of the court to the [Secretary](#) or other officer designated by him for that purpose. The [Secretary](#) thereupon shall file in the court the record of the proceedings on which the [Secretary](#) based the regulation, as provided in [section 2112 of title 28](#).

(2)

If the petitioner applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the [Secretary](#), the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the [Secretary](#), and to be adduced upon the hearing, in such manner and upon such terms and conditions as to the court may seem proper. The [Secretary](#) may modify his findings, or make new findings, by reason of the additional evidence so taken, and he shall file such modified or new findings, and his recommendations, if any, for the modification or setting aside of his original regulation, with the return of such additional evidence.

(3)

Upon the filing of the petition referred to in paragraph (1) of this subsection, the court shall have jurisdiction to review the regulation in accordance with chapter 7 of title 5 and to grant appropriate relief as provided in such chapter.

(4)

The judgment of the court affirming or setting aside, in whole or in part, any such regulation of the [Secretary](#) shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in [section 1254 of title 28](#).

(5)

Any action instituted under this subsection shall survive, notwithstanding any change in the [person](#) occupying the office of [Secretary](#) or any vacancy in such office.

(6)

The remedies provided for in this subsection shall be in addition to and not in substitution for any other remedies provided by law.

**(e)AVAILABILITY OF RECORD**

A certified copy of the transcript of the record and administrative proceedings under this section shall be furnished by the [Secretary](#) to any interested party at his request, and payment of the costs thereof, and shall be admissible in any criminal, exclusion of imports, or other proceeding arising under or in respect of this part irrespective of whether proceedings with respect to the regulation have previously been initiated or become final under this section.

**(f)TECHNICAL ELECTRONIC PRODUCT RADIATION SAFETY STANDARDS COMMITTEE**

(1)

(A)

The [Secretary](#) shall establish a Technical [Electronic Product Radiation](#) Safety Standards Committee (hereafter in this part referred to as the “Committee”) which he shall consult before prescribing any standard under this section. The Committee shall be appointed by the [Secretary](#), after consultation with public and private agencies concerned with the technical aspect of [electronic product radiation](#) safety, and shall be composed of fifteen members each of whom shall be technically qualified by training and experience in one or more fields of science or engineering applicable to [electronic product radiation](#) safety, as follows:

(i)

Five members shall be selected from governmental agencies, including [State](#) and Federal Governments;

(ii)

Five members shall be selected from the affected industries after consultation with industry representatives; and

(iii)

Five members shall be selected from the general public, of which at least one shall be a representative of organized labor.

(B)

The Committee may propose [electronic product radiation](#) safety standards to the [Secretary](#) for his consideration. All proceedings of the Committee shall be recorded and the record of each such proceeding shall be available for public inspection.

(2)

Payments to members of the Committee who are not officers or employees of the United [States](#) pursuant to subsection (c) of [section 210 of title 42](#) shall not render members of the Committee officers or employees of the United [States](#) for any purpose.

**(g)REVIEW AND EVALUATION**

The [Secretary](#) shall review and evaluate on a continuing basis testing programs carried out by industry to assure the adequacy of safeguards against hazardous [electronic product radiation](#) and to assure that [electronic products](#) comply with standards prescribed under this section.

**(h)PRODUCT CERTIFICATION**

Every [manufacturer](#) of an [electronic product](#) to which is applicable a standard in effect under this section shall furnish to the distributor or dealer at the time of delivery of such product, in the

form of a [label](#) or tag permanently affixed to such product or in such manner as approved by the [Secretary](#), the certification that such product conforms to all applicable standards under this section. Such certification shall be based upon a test, in accordance with such standard, of the individual article to which it is attached or upon a testing program which is in accord with good manufacturing practice and which has not been disapproved by the [Secretary](#) (in such manner as he shall prescribe by regulation) on the grounds that it does not assure the adequacy of safeguards against hazardous [electronic product radiation](#) or that it does not assure that [electronic products](#) comply with the standards prescribed under this section.

**(i) DECLARATION OF IMMINENT HAZARD TO PUBLIC HEALTH: CLARIFICATION OF FDA OFFICIAL POLICY REGARDING RF SAFETY FOR RADIATION EMITTING DEVICES (EFFECTIVE JANUARY 1, 2022)**

**(1)**

**FDA Preamble to Text of Regulation<sup>51</sup>**

The U.S. Food and Drug Administration's (FDA Center for Devices and Radiological Health (CDRH) is [responsible for regulating radiation-emitting electronic products](#). The FDA's statutory authority to regulate certain classes of radiation-emitting electronic products is granted by the Federal Food, Drug and Cosmetic Act, Chapter V, Subchapter C, Electronic Product Radiation Control. The CDRH's goal is to protect the public from hazardous and unnecessary exposure to radiation from electronic products. For most electronic products, safety regulation is divided between CDRH and state regulatory agencies. CDRH regulates the manufacture of the products, and the states regulate the use of the products. Any product that contains an electronic circuit and generates any type of radiation is an electronic product that emits radiation. X radiation (x-rays), microwaves, radio waves, laser, visible light, sound, ultrasound, and ultraviolet light are examples of the many types of radiation emitted by electronic products. It is always the manufacturer's responsibility to produce an electronic product that does not emit hazardous and unnecessary radiation of any type and to comply with the general requirements in Title 21 CFR 1000 through 1005. If there is no performance standard associated with the product, the manufacturer may still have certain reporting requirements, as defined in Table 1 of 21 CFR 1002.1. Certification means that the manufacturer of a radiation-emitting electronic product states that the product complies with applicable FDA performance standards and does not emit hazardous and unnecessary radiation. Certification is based upon the manufacturer's own quality control testing program and does not indicate FDA approval. Certification is a manufacturer's statement that indicates its product complies with the applicable standard. The manufacturer is responsible for assuring in the certification ([21 CFR 1010](#)) that a product complies with applicable standards to the best of its knowledge. This statement of certification must be based on an acceptable quality control and testing program which can demonstrate that each product manufactured complies with the applicable standards.

**(2)**

**Proposed Rule and Sub-Rules**

**(i)**

**Clarification of FDA Official Policy regarding RF Safety for Radiation Emitting Devices.** A dangerous situation has arisen creating an Imminent Hazard to public health regarding whether the FDA has officially adopted, or not adopted, an APA-compliant policy regarding RF safety of various radiation emitting devices. The intent of this section is to clarify FDA official policy in this regard.

**(a)**

**Scope and Coverage.** This Rule applies to all information and communication technology devices and systems emitting Radio Frequency Radiation (RF) as part of their connectivity, information transfer and communication functions.

**(b)**

**Imminent Hazard. Definitions.** This provision is based on 21 CFR - Sec. 2.5 § 2.5 Imminent hazard to the public health:

---

<sup>51</sup> <https://www.fda.gov/radiation-emitting-products/electronic-product-radiation-control-program/getting-radiation-emitting-product-market-frequently-asked-questions>

*“(a) Within the meaning of the Federal Food, Drug, and Cosmetic Act an Imminent Hazard to the public health is considered to exist when the evidence is sufficient to show that a product or practice, posing a significant threat of danger to health, creates a public health situation (1) that should be corrected immediately to prevent injury and (2) that should not be permitted to continue while a hearing or other formal proceeding is being held. The Imminent Hazard may be declared at any point in the chain of events which may ultimately result in harm to the public health. The occurrence of the final anticipated injury is not essential to establish that an Imminent Hazard of such occurrence exists.*

*(b) In exercising his judgment on whether an Imminent Hazard exists, the Secretary will consider the number of injuries anticipated and the nature, severity, and duration of the anticipated injury. 21 CFR - Sec. 2.5§ 2.5 Imminent hazard to the public health.”*

*(ii)*

### **Sub-Rules**

*a.*

*The HHS and the FDA hereby declare an Imminent Hazard concerning actions taken to induce reliance on a non-existent or yet to be promulgated HHS and FDA safety regulations for Radio Frequency Radiation (RF). The general impression, explicit or implicit, that standards and regulations have actually been promulgated and thoroughly protect public health, is based on false and misleading information being widely disseminated. At present the HHS and the FDA have not promulgated such standards and regulations pursuant to an APA-compliant notice and comment process.*

*b.*

*Despite ubiquitous and growing worldwide use of such devices, the HHS and the FDA have yet to establish safety standards for RF emissions from end-user devices, pursuant to an APA-compliant process. These devices include but are not limited to cell phones, cell tower antennas and base stations, OTARD devices, Wi-Fi routers, and add-on commercial devices such as smart meters (utility meters which include communication transceivers), and remote sensing capability devices such as those embedded in implanted cardiac pacemakers and defibrillators.*

*c.*

*To pronounce publicly, or imply, or allow others to pronounce or imply without correction, that the HHS and the FDA have in fact established safety standards for RF emissions and consequent human exposure, when it has not, violates the law and rules prohibiting false and misleading statements contained in the Food, Drug, and Cosmetic Act, and the regulations promulgated by the FDA to implement that Act, unless and until the FDA formally and officially adopts RF emission safety standards.*

*d.*

*Continued public statements made in reliance by individuals, governmental organizations, public health and other private organizations, private businesses, business organizations, local, state or federal regulatory agencies or any other groups or individuals, on the existence of HHS and FDA established RF emission safety standards constitute an Imminent Hazard to public health, until and unless the HHS and the FDA officially establish RF emission safety standards.*

*e.*

*Reliance on absent or yet-to-be established HHS and FDA RF emission safety standards creates a false sense of security around presumed safety by the public that promotes the continued use of untested and unmonitored technologies resulting in expanded exposure of members of the public to RF emissions, based on the misrepresentation that the risks of RF emissions have been*

*evaluated, mitigated and are continuously monitored by the HHS and the FDA, when, in fact, official evaluation of risks posed by RF technology emissions has yet to be undertaken by the HHS and FDA.*<sup>52</sup>

*f.*

*The FDA recognizes that it is now critical for the agency to clarify its official policy regarding RF emissions and consequent human exposure; that the present situation of regulatory uncertainty and ambiguity is itself greatly contributing to the FCC's practice of not monitoring or enforcing existing FCC RF guidelines, even when there is evidence that RF devices and systems are regularly violating these emission guidelines, and are resulting in dangerous exposure of both users and bystanders.*

*Petitioners ask the HHS and the FDA to adopt the forgoing language as an official regulation of the HHS and the FDA to clarify the fact that they have yet to establish safety standards for RF devices and systems.*

*(June 25, 1938, ch. 675, § 534, formerly act July 1, 1944, ch. 373, title III, § 534, formerly § 358, as added Pub. L. 90–602, § 2(3), Oct. 18, 1968, 82 Stat. 1177; amended Pub. L. 91–515, title VI, § 601(b)(2), (3), Oct. 30, 1970, 84 Stat. 1311; renumbered § 534 and amended Pub. L. 101–629, § 19(a)(1)(B), (2)(B), (3), (4), Nov. 28, 1990, 104 Stat. 4529, 4530; Pub. L. 103–80, §§ 3(w), 4(a)(2), Aug. 13, 1993, 107 Stat. 778, 779.)*

---

<sup>52</sup> It is noteworthy that there is universal acceptance that waveforms used for information transfer through wireless devices and systems are biologically active. The most direct evidence of this observation is the global reliance on the Specific Absorption Rate as an estimator of exposure that relates to thermal, biological effects. In addition, these waveforms have been shown to alter DNA/RNA.

## **XI. APPENDIX 2: Declarations from Scientists, Doctors and Organizations**

In this appendix are declarations from professionals and organizations who have studied the technologies that emit RF and the impacts of those technologies in the areas of health, safety, and quality of life. Declarants are deeply concerned that throughout the country decision makers with authority are accepting without careful review the widespread proposition that the federal government (FCC and FDA) has promulgated official safety standards covering RF emissions, when Petitioners and Declarants can find no credible evidence that such official FDA safety standards have in fact been formally adopted. Declarants believe the present state of regulatory uncertainty and ambiguity presents a risk of irreparable harm to themselves and many others and an Imminent Hazard to public health.

## A. Environmental Health Trust

### Declaration on FDA's Misrepresentations of FDA's Scientific Determination for Cell Phone and Wireless Radiation Safety

#### Introduction

This Declaration is submitted by Theodora Scarato, Executive Director of Environmental Health Trust (EHT), one of the world's preeminent research and educational organizations on health effects of Radio Frequency Radiation (RFR)/Electromagnetic Fields (RF). The Declaration documents in detail a Situation of Imminent Hazard due to a broad range of contradictory statements, critical omissions, half truths, haphazard activities and misrepresentations asserted by the Food and Drug Administration (FDA) over many years regarding the agency's official policy and scientific activities concerning RF safety.

The result of FDA's contradictory presentations is the propagation of the false illusion that *safety is assured* for 5G, cell phones and cell towers. The FDA asserts it has reviewed "the totality" of the science, yet it has never completed a hazard or risk assessment of the full body of science. In fact the FDA has only released a literature review limited in scope to cancer and cell phones. The FDA has released a science based evaluation of U.S. human RF exposure limits specifically, nor of studies on 5G technology, nor of studies on impacts to children, nor of non cancer health effects such as brain damage and sperm damage; yet the FDA asserts without adequate evaluation that current US RF exposure limits protect the public.

Unless the FDA has reports and evaluations that have never been made public, the FDA has repeatedly misrepresented its activities in regards to cell phone and wireless radiation safety limits. When scientists and policymakers request specific information on FDA's policies and level of scientific review, the FDA has repeatedly refused to answer questions.

Most detrimentally, the FDA's contradictory presentations have taken on a life of their own. Each misleading or half truth once allowed or encouraged, is quoted, augmented and expanded into a cascade of false safety assumptions, innuendoes, and falsehoods amplified by the media, wireless companies and even elected officials.

Due to the cascade of misinformation the FDA's statements foster, most people believe the following **false narrative**:

***FALSE: The FDA has a scientific review process in place whereby FDA scientists have thoroughly reviewed all of the latest science, including 5G infrastructure, and used science based best practice methods to ensure current FCC RFR safety limits are safe for the public.***

***FALSE: The National Institutes of Health National Toxicology Program studies that found cancer in rats have absolutely no relevance to human health.***

***FALSE: The FDA's science based determination is that cell phones have such a large 50-times safety factor that they can be used snug to the brain and body, even by children and pregnant women, without any risk whatsoever.***

This Declaration provides copious evidence documenting that the above wireless safety narrative is false.

The multitude of hazards to the American public resulting from the FDA's actions and inactions is profound, alarming, continuing, and imminent. Elected officials inaccurately believe that the FDA is ensuring safety against all harms and that they are regularly monitoring the science. As documented in this declaration, FDA's statements to the FCC and Congress that the FDA has evaluated the adequacy of US FCC limits have resulted in major policy and legal decisions at the federal, state and local level which allow significantly increased public exposure to RF.

**The Bottom Line: When members the public raise the issue of health effects for children in schools, or request accommodations to protect their health, they are sent a dazzling array of responses all eventually pointing to the FCC RFR limits that rest on the FDA's unsubstantiated safety assurances. They are provided no accommodations or protective action.**

Yet, the havoc is easily and immediately corrected. **All the FDA needs to do is to clarify its official activity, level of reviews and policy on RF safety, thus putting a stop to all the misinformation and the resulting confusion.**

THIS DECLARATION EXCERPTS FROM A FULL REPORT<sup>53</sup> (LINKS INCORPORATED BY REFERENCE)

This declaration includes the Executive Summary, Misrepresentation #1, #2, #7 #13 and Section X. A Remedy Is Needed, As the FDA's Failure to Act Will Lead To Continued Harm and key excerpts from a longer 150+ page Report by Environmental Health Trust on [FDA's Misrepresentations of FDA's Level of Review for Cell Phone and Wireless Radiation Safety](http://ehtrust.org/fdas-misrepresentations-of-cell-phone-radiation-safety-eh-report/). The Table of Contents of this full report is below and can be found online at <http://ehtrust.org/fdas-misrepresentations-of-cell-phone-radiation-safety-eh-report/>

#### TABLE OF CONTENTS OF FULL REPORT

- I. Executive Summary
- II. About Environmental Health Trust

---

<sup>53</sup> For further evidence of Imminent Hazard, see generally the entire record in *EHT et al. v FCC* which we hereby incorporate in full. See also <http://www.nap.edu/catalog/12036/identification-of-research-needs-relating-to-potential-biological-or-adverse-health-effects-of-wireless-communication>.

III. FDA's Contradictory Statements, Misrepresentations and Lack of Clarifications Regarding its Policy-This Declaration contends that FDAs misleading information is helping cause an imminent hazard to the American public by allowing an unprecedented increase to RF exposure.

1. Misrepresentation #1: The FDA evaluated the "totality" of scientific data to make a determination that 1. That there are no health effects from cell phone radiation and 2. That FCC Radio Frequency Radiation (RFR) limits are adequately protective and do not need to be changed.
2. Misrepresentation #2: The FDA's "Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer" released in 2020 is a scientifically valid risk assessment rather than just a literature review.
3. Misrepresentation #3: The FDA has evaluated the science on specific non-cancer effects such as oxidative stress, impacts to reproduction and people with electromagnetic sensitivity.
4. Misrepresentation #4: The FDA states that "the majority of studies" do not show an association between cell phones and health problems.
5. Misrepresentation #5: The FDA states that RFR studies which find biological effects have not been replicated.
6. Misrepresentation #6: The FDA misrepresents the significance of its own sponsored \$30 million U.S. National Toxicology Program (NTP) animal study findings and presents inaccurate facts regarding the study.
7. Misrepresentation #7: The FDA has evaluated the FCC's human exposure limits for RFR and come to a determination that the limits are protective based on its scientific review of the limits.
8. Misrepresentation #8: The FDA states they "continually monitor the scientific studies" yet FDA shows no evidence of regular research monitoring nor regular scientific reviews.
9. Misrepresentation #9: The FDA states there is "scientific consensus" that RFR radiation is safe and safety is assured.
10. Misrepresentation #10: The FDA misrepresents that children and pregnant women are adequately protected by FCC RFR human exposure limits, despite no publicly available review on the risks posed by the unique vulnerability of children, pregnant women and the fetus.
11. Misrepresentation #11: The FDA presents to the public that cell phones are safe in body contact positions, well aware that phones in body contact positions exceed the FCC's federal RFR exposure limits.
12. Misrepresentation #12: The FDA misrepresents the existence of a 50 times safety factor in relation to cell phone radiation exposure limits.
13. Misrepresentation #13: The FDA misrepresents its level of review of 5G technology, communicating that the 5G network is safe.

V. The FDA's Critical Omissions

1. Omissions Related to FDA's Role and Authority
2. Omissions Related to FDA's Level of Review
3. Omissions Related to FDA's Public Health Information on How To Reduce Exposure
4. Omissions Related to FDA's Involvement in the National Toxicology Program

5. Omissions Related to the defunct Radiofrequency Interagency Work Group and lack of advisory on RFR by the FDA's Technical Electronic Product Radiation Safety Standards Committee.

VI. The FDA's Lack of Transparency and Refusal to Fully Respond to Questions and the Call for Corrections by the Public, Federal Officials and Scientists.

VII. The FDA Website 2020 Rewrite Misrepresents the FDA's Role After A Decade of Stagnant Website Material

VIII. The Nationwide Impact of the FDA's Misrepresentations Has Serious and Deleterious Consequences to the American Public

1. Influence at the Communities and to Local Governments
2. Influence on State Government and State Elected Officials
3. Influence at the Federal Level on Federal Agencies and Federal Policy
4. Influence on U. S. Congress
5. Influence on Lawsuits and The Courts' Perceptions of Safety
6. Influence on Medical Organizations and Professional Organizations
7. Influence on the Armed Forces
8. Influence on Universities and Educational Institutions
9. Influence on the Media
10. Influence on the Wireless Companies' Ability to Promote the Safety of Their Products
11. Influence on the Public

IX. A Remedy Is Needed, As the FDA's Failure to Act Will Lead To Continued Harm

X. Appendix of Evidence of FDA Misrepresentations and influence on Congress, State Agencies and the Media

## **Executive Summary**

We believe the FDA has made numerous misleading misrepresentations and critical omissions regarding the FDA's level of review and risk assessment for the public health risks of 5G, cell phone and wireless radiofrequency radiation (RFR). The American public, elected officials and agencies at the local, state, local and federal level have detrimentally relied on the FDA, erroneously believing that the agency has evaluated the totality of the science, and that the FDA has officially determined that there is no public health risk from exposure.

The FDA's numerous misrepresentations and critical omissions regarding its activities and level of review of the science convey the false illusion that *safety is assured*. Every agency from the local to state and federal level point to the FCC which is not a health and safety agency but validates the adequacy of its limits based on the FDA's publicly available information which asserts a robust evaluation of health risks.

However, as detailed in this Declaration, the FDA has not systematically reviewed the "totality" of the evidence to determine public health risks, nor has it evaluated the FCC human exposure limits with a science based methodology. Further, the agency has repeatedly refused to answer questions related to its activities regarding wireless radiation, and refuses to correct inaccurate information on its website.

The FDA has omitted that the Agency has no authority in regards to cell tower emissions and has not scientifically evaluated cell tower antenna maximum permissible RFR levels, nor 5G modulations and has not publicly shown any systematic evaluation of published studies on brain development and reproduction. The FDA omits that it has no authority or expertise regarding impacts to non humans - wildlife trees and plants. The FDA is aware that cell phone radiation exposures can be so high that they may exceed the FCC's limits when phones are resting on the body or carried in a pants pocket or bra, but omits this information from its public communications. The FDA is also aware that a child's developing brain and a fetus are more sensitive to cell phone radiation, but has chosen to omit information on children and fetus vulnerability, dangerously downplaying the human health risks to the American public.

The FDA's misleading information has influenced the public, media, medical professionals, courts and government officials at local, state and federal levels which has led to the unchecked rapid proliferation of wireless networks across the nation in schools, neighborhood streets and workplaces.

At the core of the problem is the fact that the FCC's human exposure regulations for wireless RF radiation have remained unchanged since 1996, and this is directly due to years of FDA's haphazard activities and silence regarding the health effects of cell phone radiation. As the EPA was defunded from research on RF in 1996, the FDA has long been the only federal health agency considered to have authority to opine on RF health issues, due to the FDA's power to regulate radiation emitting electronic products under the provisions of the Food, Drug and Cosmetic Act.

In 2013, the FCC opened up an inquiry seeking comment on the adequacy of these 1996 human exposure limits, and the FDA did not respond for years. Then, on April 24, 2019, FDA Director of the Center for Devices and Radiological Health Dr. Jeffrey Shuren submitted a [letter to the FCC](#) with one paragraph dedicated to the issue which stated, "*the available scientific evidence to date does not support adverse health effects in humans due to exposures at or under the current limits...*" Soon after on December 4, 2019 the FCC made a decision **not** to update its 1996 RF limits **largely based on this FDA letter**, and the FDA's web pages and FDA Shuren's statements rejecting the conclusions of the National Toxicology Program study that found cancer and DNA damage in rodents.

Environmental Health Trust and 13 petitioners filed a lawsuit<sup>54</sup> against the FCC for this 2019 refusal to update the federal regulations, and we argued that the FDA had not shown any substantive science based report nor risk analysis to substantiate their online statements and [April 2019 Submission to the FCC](#).

On August 13, 2021, the United States Court of Appeals for the District of Columbia Circuit made [a judgment](#) in our case and ruled that the **FCC had failed to show** that its re-affirmation of those 25-year-old wireless radiation limits was based on a reasoned evaluation of the relevant scientific evidence because it ignored record evidence about children's vulnerability, non-cancer effects, impacts to wildlife and the environment, and the effects of long-term

---

<sup>54</sup> [Full Opening Brief of EHT et al v FCC 8/14/2020 ORAL ARGUMENT REQUESTED 20-1025 \(Lead\); 20-1138 \(Consolidated\) UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT](#)

exposures. Importantly, the Court [found](#) that the FCC had improperly relied on FDA's "conclusory statements" regarding RFR and health - **the very same statements we document in this Declaration as misrepresentations**<sup>55</sup>. The court stated the FDA's statements "*represent a failure by the FDA to address the implication of Petitioners' studies: The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate.*"

The FDA's subsequent 2020 release of "[Review of Published Literature between 2008 and 2018](#)" further proved that the FDA's conclusion of no harm is unsubstantiated by FDA review, because the FDA's literature review was limited to cancer and cell phones only. It did not include a review of the literature on non-cancer health effects (brain damage, oxidative stress, reproductive harm, etc.), and did not include a review of cell tower studies or environmental effects. Importantly, the FDA's 2020 literature review was not a risk assessment nor hazard identification report and it had numerous inaccuracies - inaccuracies which remain uncorrected to this day. **Yet the FDA misleadingly presents this review as proof of safety.**

The FDA's failure to honestly present its EMF activities, and its misrepresentations regarding the adequacy of the FCC's human exposure limits, have led to a rapidly increasing nationwide RF exposure for all age groups, putting the entire U.S. population at risk. The FCC's limits and the FDA's misrepresentations are used as proof of safety for the rapid deployment of 4G and 5G wireless networks nationwide. Because of this failure, government officials at all levels have rejected evidence presented to them by constituents indicating that densified wireless infrastructure is unsafe, and instead officials are funding new wireless projects in schools and communities. Half the states in the country have passed small cell legislation which strip local authority and fast-track cell tower installations into neighborhoods, many allowing cell antennas less than 50 feet from homes and bedrooms, significantly increasing the environmental RF exposures and leading to documented harms.

People have been injured, and the number of injuries will continue to grow from the wireless networks and wireless devices continuously brought to market under the FCC's 25-year-old, outdated regulations — rules that the FDA has rubber stamped by its inaction, omissions and misrepresentations.

The FDA omits critical information about its scope of authority and level of review to policymakers, allowing false safety assumptions to be widely disseminated. For example, when asked about the safety of 5G networks, the FDA omits to members of Congress that it has no authority regarding cell tower antenna radiation, and the FDA also omits that no US environmental agency is actively monitoring the escalating environmental RF exposures for any adverse effects to wildlife<sup>56</sup>. The FDA omits that it has not systematically reviewed the implications of another type of non ionizing EMF from electronic devices - magnetic field

---

<sup>55</sup> The FCC cited three statements by the FDA as substantiating their determination: a [2/2018 FDA statement](#) (saying the "totality" of the research shows no harm, a [4/2019 FDA letter](#) (with one paragraph discounting the relevance of the NTP results), and the 12/4/2019 dated FDA website page "[Do cell phones pose a health hazard?](#)" (which does not reference the FDA research review).

<sup>56</sup> Research has documented numerous environmental effects from RFR exposure including [tree damage](#), [biochemical changes in plants](#) and harm to [pollinators](#) and [wildlife](#).

Extremely Low Frequency radiation exposure from cell phones and wireless devices used in body contact positions. The FDA omits that the Interagency RFR workgroup is defunct, and that its advisory committee on the issue has not met since 2016.

Unless the FDA is withholding its science-based reports from the public, all of the publicly available evidence indicates that the FDA is misrepresenting its EMF activities and level of review on the issue, creating false safety assurances. It is certainly possible that the FDA has performed a robust systematic scientific review and risk assessment which has not been made public. If so, the FDA has failed to be transparent to the public and to federal agencies and elected representatives who have repeatedly requested such information. If indeed a robust systematic science based FDA risk assessment exists, it should be made public and subject to scrutiny. Until the FDA publicly releases such documentation, we believe that the FDA is misrepresenting this issue in numerous areas as details in this Declaration.

**In short, the American people believe that their government is watching out for them. They believe that the FDA - the U.S. health agency with authority in regards to wireless radiation - is doing its job. This Declaration provides proof that this is not the case.**

As the legacy of asbestos, lead, and cigarettes inform us, the FDA's failure to fully assess and mitigate risk will lead to irreversible harms for generations to come.

### **Years of Misrepresentations and Haphazard Activities**

To substantiate the long history of misrepresentations by FDA staff, EHT has compiled years of personal direct email communications with FDA staff initiated by an in-person meeting between EHT's Devra Davis, PhD and Theodora Scarato at FDA headquarters on September 23, 2014. In that meeting, Davis and Scarato presented research linking RFR to cancer and reproductive damage, as well as case reports of young women developing unusual breast cancers directly underneath where they stored a transmitting cell phone in their bra. EHT requested that the FDA inform the public that cell phones should not be in a pocket or bra, as FCC regulatory limits would be violated.

The subsequent email conversations over the years between Scarato and FDA staff showcase a haphazard approach by the agency, a refusal to warn the public about clear violations of FCC exposure limits, and a disregard for credible science clearly indicating harm, especially for children. The FDA clearly stated they had not performed a research review in a 2016 email and refused to answer the question of whether the FDA had reviewed the FCC limits. When the NTP released its findings in 2016 and 2018, Scarato repeatedly requested the FDA update its website as it linked to 2010 information, but the FDA never did, at least until the February 2020 rewrite. FDA Importantly, when repeatedly asked what specific levels of RFR exposure would trigger FDA's action on the issue, and when asked to correct inaccuracies, FDA staff repeatedly refused to answer, exemplifying the haphazard activities and lack of transparency and misrepresentation.

As additional evidence for this Declaration, EHT has collected and analyzed FDA's letters to members of Congress, to state/local officials, and to scientists. Furthermore, we have included statements by the FCC referencing the FDA's false safety assurances, and dismissing the National Toxicology Program study which found adverse effects in animals. The FDA's misleading website information on cell phone radiation, and the FDA's Dr. Shuren's online statements, also provide critical evidence of the FDA's misrepresentations to the public. We also have provided a short list of examples of how the wireless industry then uses the FDA verbiage to amplify the false message that safety is assured. This information is listed in Section X. [Appendix of Evidence of FDA Misrepresentations and influence on Congress, State Agencies and the Media](#)

### **The FDA Downplays the Significance of the National Toxicology Program Study Which Proves Non Thermal Effects, and Refuses to Correct the Inaccurate FDA Information on The Study**

FDA's Dr. Jeffrey Shuren has repeatedly stated that the FDA does not agree with the NTP study's cancer determinations, has publicized this disagreement on the FDA website, and also in one paragraph of his April 2019 letter submitted to the FCC regarding FCC's human exposure limits. The FDA's rejection of the NTP study for being an "animal" study that the FDA itself nominated, displays a shockingly two-faced and hypocritical attitude to animal testing. Because every agent known to cause cancer in humans also produces cancer in animals when adequately studied, animal studies have constituted a bedrock of FDA operations for drug development and toxicology evaluation since the agency's inception.

Determinations based on animal studies from the 1970s and 1980s remain the sole criterion on which cell phone testing protocols have rested as documented in [ANSI/IEEE C95.1-1991](#). Yet, when findings from state-of-the-art National Toxicology program animal studies document the damaging cumulative chronic impacts of non-thermal levels of RF, the FDA staff rejects the study as not relevant to humans. Numerous scientists have determined that the NTP's large scale animal studies, paired with the Ramazzini Institute research and published human studies that have found an association between cell phone use and cancer, indicate that RF now meets criteria to be a human carcinogen.<sup>57,58,59</sup> Children's developing brains are more sensitive to RFR radiation and their unique physiology results in their absorption of proportionately [more RFR](#) compared to adults.

Instead of rejecting the NTP study, many scientists argue the FDA needs to fulfill the intent of their nomination of the study to the NTP, and conduct a quantitative risk assessment from the NTP data so that the FCC can develop health-protective exposure standards. However, the FDA has not responded to the scientists who have repeatedly written to the agency regarding

---

<sup>57</sup> Coureau G, Bouvier G, Lebailly P, Fabbro-Peray P, Gruber A, Leffondre K, Guillamo JS, Loiseau H, Mathoulin-Pélissier S, Salamon R, Baldi I. [Mobile phone use and brain tumours in the CERENAT case-control study](#). Occup Environ Med. 2014;71(7):514-22.

<sup>58</sup> Hardell L, Carlberg M. Mobile phone and cordless phone use and the risk for glioma - Analysis of pooled case-control studies in Sweden, 1997-2003 and 2007-2009. Pathophysiology. 2015;22(1):1-13.

<sup>59</sup> Hardell L, Carlberg M, Hansson Mild K. [Use of mobile phones and cordless phones is associated with increased risk for glioma and acoustic neuroma](#). Pathophysiology. 2013;20(2):85-110.

a quantitative risk assessment. Nor has the FDA responded to these expert scientists' requests to correct the FDA's inaccurate statements regarding the NTP and to be transparent about what experts were involved in the literature review that downplays the NTP study.

### **FDA's Misrepresentations Regarding Their Level of Scientific Review for Cell Phone and Radiofrequency Radiation.**

In this Declaration we break down the FDA's misrepresentations one by one. For each misrepresentation, we document the facts confirming that the FDA's representation is erroneous and misleading. *To be clear, in this Declaration we are not making scientific arguments as to whether RFR is harmful or not, but instead we are addressing the FDA's critical omissions and lack of honesty and transparency in its statements regarding health effects from RF.* We then follow with documentation of the far-reaching deleterious impact of these misrepresentations to public health and the environment.

Below is a short summary of the misrepresentations and the documentation. For the comprehensive documentation please go to the corresponding section for each misrepresentation in the body of the Declaration.

#### **Misrepresentation #1: The FDA evaluated the “totality” of scientific data to make a determination that there are no health effects from cell phones and that FCC radio frequency radiation (RFR) limits do not need to be changed.**

Fact: The FDA has not publicly released any reports or systematic reviews that show the FDA has reviewed all health effects. The one report the FDA did release in 2020 is simply a literature review filled with inaccurate statements the FDA refuses to correct, despite numerous letters by experts including longtime NIH scientists. Importantly, the 2020 literature review is not a systematic review, nor is it a hazard or risk assessment. The Literature review does not even reference all of the FCC's human exposure limits (maximum permissible exposure limits and localized limits for head and torso) so it certainly could not be an evaluation of these limits.

All one need do is to read the FDA Literature Review to see the review is only focused on cancer and cell phones. In addition:

1. **Government Accountability Office (GAO):** The [GAO 2020 Report on 5G](#) confirms the fact that the FDA did not include non cancer outcomes starting on page 44:

“the FCC relies on the FDA as well as other organizations—principally IEEE and the National Council on Radiation Protection and Measurements (NCRP)—to review scientific research and provide recommendations for setting RF safety standards. However, each of these organizations has only reviewed a subset of the relevant research...According to officials, the FDA monitors peer-reviewed science regarding RF energy and health. The agency does not typically make its assessments publicly available, but released one assessment publicly in February

2020. The [FDA] assessment focused on cancer-related animal and human studies of frequencies below 6 GHz. The [FDA] assessment did not include non-cancer outcomes or frequencies above 6 GHz.”

Here are examples where the FDA makes misleading statements about evaluating the “totality of the science.”

The [11/1/2019 online statement by FDA’s Dr. Shuren](#) about the NTP study states:

*“Based on our ongoing evaluation of this issue, the totality of the available scientific evidence continues to not support adverse health effects in humans caused by exposures at or under the current radiofrequency energy exposure limits. We believe the existing safety limits for cell phones remain acceptable for protecting the public health.”*

On September 9, 2019: The [FDA sent a letter to Representative Anna Eshoo and Jeff Merkley](#) stating in the letter and section on “FDA’s findings” that:

*“FDA considers all relevant scientific data on RFR and does not limit its considerations to any specific frequency or modulation due to the increasing use of, for example, Wi-Fi enabled medical devices.”*

The FDA’s online webpage [“Do Cell Phones Pose a Health Hazard?”](#) states:

*“Based on the evaluation of the currently available information, the FDA believes that the weight of scientific evidence has not linked exposure to radio frequency energy from cell phone use with any health problems at or below the radio frequency exposure limits set by the FCC.”*

*“The available scientific data on exposure to radio frequency energy show no categorical proof of any adverse biological effects other than tissue heating.”*

*“The FDA’s physicians, scientists, and engineers regularly analyze scientific studies and publications for evidence of health effects of exposure to radio frequency energy from cell phones. The weight of nearly 30 years of scientific evidence has not linked exposure to radio frequency energy from use of cell phones to health problems, such as cancer.”*

The FDA does not inform members of Congress that their literature review is limited to only cancer (not memory problems, brain damage, sperm damage, etc.) and cell phones (not Wi-Fi, Bluetooth, 5G small cells, OTARD devices, etc.). The FDA also omits that no federal agency is actively reviewing the science on 5G modulation or cell tower antenna radiation.

The full documentation of how the FDA is misrepresenting that it has evaluated the “totality of the science can be found in Misrepresentation #1 in the full report [FDA’s Misrepresentations of FDA’s Level of Review for Cell Phone and Wireless Radiation Safety](#)

**Misrepresentation #2: The FDA’s “Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer” released in 2020 is a scientifically valid risk assessment.**

Fact: Although the FDA inaccurately states in its 2020 Literature Review that they “completed an updated radiofrequency (RF) exposure risk analysis,” this literature review is not a scientifically defensible “risk analysis” as it does not follow best practice guidelines for risk assessment developed by US scientists

Good practice recommendations for systematic review for risk assessment and hazard identification of environmental health exposures have been developed and published by US government experts and international scientists ([Whaley et al., 2016](#), [Whaley et al., 2020](#), [Rooney et al., 2014](#), [NAS, 2017](#), [Stephens et al., 2016](#)). The U. S. Office of Health Assessment and Translation (OHAT) adapted guidance, principals and methods for systematic-review of environmental health questions (through consultation with technical experts in systematic review and human health assessments, as well as scientific advisory groups and the public) to provide greater objectivity and transparency to the process of developing conclusions. In health care, detailed methodologies with descriptions of strengths and discussions of nuances of scientific review steps have been developed by the [International Cochrane Collaboration](#), and the [U.S. Agency for Health Research Quality](#) (AHRQ), using methods that are summarized on the Preferred Reporting Items for Systematic Reviews and meta-Analyses (PRISMA) website ([Moher et al., 2009](#), [Liberati et al., 2009](#)). However the FDA did not show that it followed these methods.

In contrast to these published expert practice recommendations for review, the FDA’s 2020 Literature Review did not show the FDA systematically compared FCC’s limits to the effects found at various exposure levels in the full body of published scientific publications.

The FDA did not follow best practices. It did not grade nor weigh the evidence, rate the level of confidence or translate that level into levels of evidence for health effects. The FDA did not publicly publish the protocol nor secure peer-review and public feedback. There are no explicit standards or protocols relied on for selecting and evaluating the studies, and no effort to meta-analyze them in any way. Nor did the FDA share which scientists were part of the evaluation, nor if they had been vetted for conflicts of interest. The FDA did not check accuracy in their numeric data utilizing an appropriate transparent process.

Importantly, while it could be possible that such a risk analysis exists and it has been kept confidential, this documentation has *never* been shared with the public or scientists who repeatedly have requested it. The FDA should share its grading of the research and risk analysis not only as a matter of good government, but to ensure confidence in the FDA's conclusions and in the US regulations for wireless devices.

Further, the FDA Literature Review is not a systematic review, nor a review of the adequacy of FCC limits, and it is riddled with major errors that the FDA refuses to correct.

However the FDA misrepresents this review as substantiating its conclusions that FCC's limits do not need to be changed, and the review is used on the FDA's web pages to substantiate the Agency's assertion that cell phones are safe. Numerous scientists have called on the FDA to retract this review, but to date have received no response from the FDA. Here are some examples of the FDA misrepresenting that their literature review is a risk assessment. The [FDA's Office of Legislation 2020 letter to U.S. Senator Baldwin](#) states:

*"Based on this **extensive risk analysis**, our determination remains consistent that **there is no scientific evidence that warrants a change in cell phone safety limits**, and that there is insufficient evidence to demonstrate a causal link between cell phones and cancer in the population."*

The [FDA's letter to Eshoo and Merkley](#) creates the illusion that a risk assessment was done, stating:

*"The gold standard for the **assessment of risk to public health** remains the data and information that is available from studying effects on humans. Animal and laboratory studies can provide useful scientific information, but data on human health is the most informative where it is available. In the case of cell phone handsets, there is abundant evidence to **support FDA's conclusion** from epidemiological studies, public health surveillance data and supportive laboratory studies. The information on which FDA has based its conclusion is summarized below, together with a description of the methods that the Agency uses for undertaking risk analysis and other relevant scientific information."*

For the full documentation on the FDA's misrepresentations of its Literature Review please go to Misrepresentation #2 in the full report [FDA's Misrepresentations of FDA's Scientific Determination for Cell Phone and Wireless Radiation Safety](#).

### **Misrepresentation #3: The FDA has evaluated the science on specific non-cancer effects such as oxidative stress, impacts to reproduction, and people with electromagnetic sensitivity.**

Fact: The FDA has misrepresented that they have adequately reviewed specific non-cancer health endpoints such as oxidative stress and damage to reproduction - but has never publicly released any scientific report documenting that the FDA systematically reviewed these issues. Despite highlighting the issue of electromagnetic sensitivity on their website, the FDA has shown no science based reports nor review of this issue as well. Although the FDA has been sent several studies and published reviews on this issue indicating harmful non-cancer effects, the FDA has taken no action to properly review these issues, nor shared this science with the public.

For the full documentation on the FDA's misrepresentations of its review on non cancer endpoints please go to [Misrepresentation #3](#) in the full report [FDA's Misrepresentations of FDA's Level of Review for Cell Phone and Wireless Radiation Safety](#)

**Misrepresentation #4: The FDA states that “the majority of studies” do not show an association between cell phones and health problems.**

Fact: The FDA has stated “the majority of studies” do not show an association between cell phones and health problems, even though the FDA has not publicly released any report or research list that looked at all the studies on cell phones and health issues (cancer and non-cancer) in order to make this numerical determination. Furthermore, independent scientific evaluations on several endpoints find that the majority of studies do show adverse effects.

For the full documentation on the FDA’s misrepresentations of its determination on the “majority of studies” please go to Misrepresentation #4 in the full report [FDA’s Misrepresentations of FDA’s Scientific Determination for Cell Phone and Wireless Radiation Safety.](#)

**Misrepresentation #5: The FDA states that RFR studies which find biological effects “have not been replicated”.**

Fact: Biological effects have been replicated. In fact, the FDA’s own literature review contains replicated research indicating RFR is a tumor promoter. False sweeping general statements like this one on the FDA’s public website only serve to downplay the health issue to the American public and government. While RFR research is complex, and numerous studies do indeed suffer from critical limitations, exposure issues and confounding factors, the fact is that numerous systematic reviews have repeatedly found the same types of biological effects, and there are numerous research studies that have been in fact replicated.

For the full documentation on the FDA’s misrepresentations of lack of replication of research showing harm please go to Misrepresentation #5 in the full report [FDA’s Misrepresentations of FDA’s Scientific Determination for Cell Phone and Wireless Radiation Safety.](#)

**Misrepresentation #6: The FDA presents inaccurate information about its own sponsored \$30 million U.S. National Toxicology Program (NTP) animal study findings.**

Fact: The FDA has presented inaccurate information about the [NTP study findings](#) to the public, elected officials and federal agencies. The FDA has not corrected their statements, despite being provided factual information and a science-based request for corrections by NIH scientists and experts. Furthermore, the FDA mischaracterizes the study by omitting the key findings of cancer and DNA damage and putting forward unfounded criticisms.

The end result of this deception is that the public believes this large-scale animal study has no relevance to human health, elected officials believe the study is irrelevant to policy decisions, and the U.S. federal regulations for human RF exposure are believed to be adequate to

protect public health. The FDA omits that the NTP study is significant because biological effects were found at non-thermal levels, indicating the basis for FCC maximum RF exposure limits - that thermal effects are the only important effects - is no longer accurate.

As Dr. Ronald Melnick [states](#), *“The NTP studies were conducted to test the widely-held assumption that cell phone radiofrequency radiation could not cause cancers or other adverse health effects (other than by tissue heating) because this type of radiation (non-ionizing) did not have sufficient energy to break chemical bonds. The NTP findings that cell phone radiation caused cancers in the heart and brain, DNA damage in brain cells, heart muscle disease and reduced birth weights clearly demonstrate that the assumption that non-ionizing radiation cannot cause cancer or other health effects is wrong.”*<sup>60</sup>

For the full documentation on the FDA’s misrepresentations of the National Toxicology Program study please go to Misrepresentation #6 in [FDA’s Misrepresentations of FDA’s Scientific Determination for Cell Phone and Wireless Radiation Safety](#).

**Misrepresentation #7: The FDA has evaluated the FCC’s human exposure limits for RFR and come to a determination that the limits are protective based on its scientific review of the limits.**

Fact: Despite the FDA's misleading statements to several members of Congress, the FDA has never released any science based report that evaluates the FCC’s human exposure limits for RF, and determined with science based methods that FCC limits are adequately protective of all harms. Instead, all the FDA has produced is its 2020 literature review *focused only on cancer and cell phones*. The FDA literature review is not a systematic review, not a hazard or risk assessment, and not a review of FCC limits - whereby levels of exposure in studies would be compared to the FCC RF limits. In fact, the FDA literature review does not even reference the actual FCC limits.

For the full documentation on the FDA’s misrepresentations regarding its level of evaluation of FCC’s human exposure limits please go to Misrepresentation #7 in [FDA’s Misrepresentations of FDA’s Level of Review for Cell Phone and Wireless Radiation Safety](#)

**Misrepresentation #8: The FDA states they “continually monitor the scientific studies” yet the FDA shows no evidence of regular research monitoring nor regular scientific reviews.**

Fact: The FDA shows no documented evidence of “regular” research reviews nor “regular” research monitoring. There are no monthly or yearly reports, no research updates and no publicly available notes or agendas from meetings on the issue of RFR. The FDA publicly states that the agency will act if credible science shows harm, but has never defined what it deems as credible, nor the process by which it evaluates or monitors the RFR issue. If the FDA is doing regular monitoring of the science, its process and opinions are being kept a secret from the public. As an example, the [FDA literature review](#) was only on studies up to the year 2018, but

---

<sup>60</sup> <https://thehill.com/opinion/healthcare/416515-theres-a-clear-cell-phone-cancer-link-but-fda-is-downplaying-it>

the FDA website has not been updated with the [numerous studies](#) published *since that date* indicating adverse health effects.

The FDA Literature Review was also not updated to include the 2020 genotoxicity paper by the National Institute of Environmental Health Sciences National Toxicology Program scientists ([Smith-Roe et al., 2020](#)) nor to include the American Cancer Society funded Yale study that links thyroid cancer to cell phone use in people with a type of common genetic variation ([Luo et al., 2020](#)).

For the full documentation on the FDA's misrepresentations regarding its "[continuous monitoring of the scientific studies](#)" please go to [Misrepresentation #8 in FDA's Misrepresentations of FDA's Scientific Determination for Cell Phone and Wireless Radiation Safety](#).

**Misrepresentation #9: The FDA states there is "scientific consensus" that RFR radiation is safe and safety is assured.**

Fact: The FDA repeatedly and inaccurately states there is "scientific consensus" that cell phones are safe, despite the fact that the FDA is fully aware that hundreds of scientists and thousands of medical doctors are warning that the science indicates serious health effects, and they recommend that the public should reduce its exposure to RF. The FDA also states that there is a scientific consensus that cell phones specifically do not cause cancer, despite the fact that numerous authors in numerous published papers conclude RF is a carcinogen.

As Dr. Ronald Melnick, now retired from 28 years as an NIH scientist, states in his 2020 [letter to the FDA](#):

"The statement on [the FDA website](#) that there is a "scientific consensus on cell phone safety" is totally wrong and should be removed since there is no scientific consensus supporting this claim. In contrast, numerous experts in the field have reported evidence that current levels of cell phone radiation can be harmful to human health."

For the full documentation on the FDA's misrepresentations regarding "scientific consensus of safety" please go to Misrepresentation #9 in [FDA's Misrepresentations of FDA's Level of Review for Cell Phone and Wireless Radiation Safety](#).

**Misrepresentation #10: The FDA states that children and pregnant women are adequately protected by FCC limits despite no publicly available review on the risks posed to children, pregnant women and the fetus - all of whom are more vulnerable due to their rapidly developing brains and higher absorption of RFR.**

Fact: For decades the FDA has repeatedly presented that there is no need for children or pregnant women to reduce RF exposure because the FDA has determined that FCC exposure

limits are adequately protective. Yet the FDA has shown no evaluation of the research on children's unique vulnerability, nor any evaluation of effects during pregnancy nor any systematic evaluation of how FCC limits have incorporated recent research on children. FDA's 2020 issued Literature Review did not focus on children's vulnerability. In fact, a search of the word "children" in the FDA's literature review finds only three studies that considered children specifically, and no studies reviewed children's deeper RF penetration, impacts to a child's developing brain, or to prenatal development.

For the full documentation on the FDA's misrepresentations regarding children and pregnancy please go to Misrepresentation #10 in [FDA's Misrepresentations of FDA's Scientific Determination for Cell Phone and Wireless Radiation Safety](#).

**Misrepresentation #11: The FDA presents to the public that cell phones are safe in body contact positions, well aware that phones in body contact positions exceed the FCC's federal RFR exposure limits.**

Fact: The FDA is aware that FCC limits can be exceeded when phones are tested in body contact position and well aware that the public has no idea of this fact. The FDA knowingly allows the American public to be exposed to RF levels in excess of the regulatory limit, yet the FDA's [website pages](#) have images of smiling people with cell phones against their heads — communicating the message that phones are safe near the body. The FDA website does not have any warnings to the public explaining that all cell phone manufacturers have [special instructions](#) — fine print warnings — buried deep in the cell phone manuals that say to keep the phone at a specified distance away from the body: from 5 to 25 millimeters (1/4" to 1").

**Here are just a few examples of the research EHT sent to FDA staff regarding cell phone radiation exposure violations. Communications went to Daniel Kassiday, William Jung, Robert Och, CDRH Ombudsman, Jeff Shuren, Mary Pastel, Robert Ochs, Michael O. Hara, Brian Beard and Bakul Patel:**

- On June 13, 2017 Scarato shared the latest research from the government of France that found hundreds of phones exceeded radiation regulatory limits when they were tested in body contact positions ([starting at page 6 Scarato/FDA emails](#)) and asked why the FDA had not taken action to inform the public.
- Scarato sent the FDA the March 12, 2019 IEEE published article ([Gandhi 2019](#)) that found if the French government measurements were done with U.S. FCC protocols, some cellphone radiation emissions would violate FCC limits up to 11 times.
- Scarato also sent the August 21, 2019 [Chicago Tribune cell phone testing data](#) showing phones violated FCC limits at body contact.

The FDA says there is "a large safety margin" that is protective, yet will not answer our repeated requests to define *how large the safety margin is*, nor at what RFR level past the FCC regulatory limit the FDA would act to enforce the limit or warn the public. The FDA shows no review of recent research to even determine at what level above the FCC limits the FDA would act. The FDA lack of clarity on the threshold of harm it subscribes to has resulted in the current

situation where people of all ages carry phones in body contact positions day and night, and pregnant women rest wireless devices on their abdomen, unaware that they could be exposing their fetus to RF which violates FCC exposure limits.

In the [May 31, 2017 email exchange](#) Scarato asked the FDA why it was not informing the public about situations where cell phones will go to peak power, such as in a car. The FDA again stated, *“The safety factors set in place for RF exposure adequately protect the general public.”*

Examples of the FDA refusing to respond regarding the “safety margin include the following examples.

1. An [email chain dated May 31, 2017](#) details how Scarato asked, *“If the FDA is supposed to protect the public then they need to inform the public of the fine print instructions in the manual related to RF. Why is the FDA not acting on this and informing people of the fine print instructions on RF on cell phones and wireless devices? Children are carrying phones on their bodies, tucked in spandex pants and in bras and jeans in school classrooms. Can you please explain why the FDA is not ensuring the public is aware of the fine print warnings?”* FDA’s Kassiday responded, *“There is a large safety factor included in the public exposure limit (see IEEE Std. C95.1-2005 Annex C, Rationale, for more information regarding this safety factor).”*
2. In response to the hundreds of tests finding RFR levels exceeded in France, on October 18, 2017 ([FDA Scarato emails page 15](#)) FDA’s Kassiday wrote, *“We have asked the French Agency for a discussion of their studies and findings and conclusions. However, they have not responded as of the writing of this response.”* When Scarato asked, *“I am writing to ask if I understand correctly that the FDA believes that it is OK to exceed the regulatory limits because of this “large safety factor?”* FDA’s Kassiday responded, *“FDA is not saying that it is OK to exceed a regulatory limit. We stated that there is a large safety factor built into these regulatory limits.”*
3. On November 19, 2017 Scarato asked what exactly the FDA’s “large safety margin” was (what numerical level) in an email, *“What does the FDA think the safety factor is for SAR exposure limits. Please state it.”* The FDA did not respond with an actual level.

Scarato repeatedly asked the FDA to share the RFR threshold level that would trigger the FDA to act on February 3, 2018, April 5, 2018, June 2, 2018, June 11, 2018, November 6, 2018, March 2019 and several other dates but has never received a response that included the actual level that would trigger FDA action.

The FDA’s only response to the question of the safety margin was talking about the 50-fold safety limit whole-body FCC limits. However this is not the regulatory limit for cell phone compliance and thus the FDA did not answer the question in regards to local tissue cell phone RFR exposure limits.

The FDA knowingly allows the American public to be exposed to RFR levels in excess of the regulatory limit. Scarato stated to the FDA ([Page 35 FDA Scarato Emails](#)), “Everyone I

have spoken to is 100% unaware of this information buried in manuals. Please explain how the FDA has decided it is not their responsibility to inform the public on this.”

The FDA’s Kassiday responded:

*“As any web search for “usability of user manuals” will reveal, there is a lot of concern and research on why most consumers ignore manuals and instructions. So it is not surprising that consumers are unaware of one particular fact in a manual when most consumers don’t read anything in user manuals. The FDA has not done a survey and we are not aware if the FCC has.”*

For the full documentation on the FDA’s misrepresentations regarding the safety of cell phones in close body proximity please go to [Misrepresentation #11](#) in [FDA’s Misrepresentations of FDA’s Level of Review for Cell Phone and Wireless Radiation Safety.](#)

### **Misrepresentation #12: The FDA misrepresents the existence of a 50 times safety factor in relation to cell phone radiation exposure limits.**

Fact: The FDA misrepresents the existence of a 50 times safety factor by confusing the public, and omitting the complete technical information needed to understand the reality that there is, in fact, no 50 times safety factor for brain tissue exposure when it comes to local SAR limits used in cell phone regulatory premarket tests.

Most of the public, elected officials and scientists (who are not bioelectromagnetic experts) do not understand the complexity of the FCC’s human exposure limits, nor that there are two types of RF SAR limits (as well as Maximum Permissible limits for cell tower emissions). However, the FDA is fully aware of the difference. The reality that there is no 50 times safety factor for the Local SAR Limit for brain tissue is a fact, even among scientists who do not believe that there are health effects from RFR at nonionizing levels. However the FDA strings sentences together so that it seems like there is a 50 times safety factor for cell phone radiation local SAR limits. Again, we have repeatedly requested that the FDA respond to our questions about what the safety margin for cell phone local SAR is, and the FDA has never responded to these questions.

For the full documentation on the FDA’s misrepresentations regarding the non existent 50 times safety margin for cell phones please go to Misrepresentation #12 in [FDA’s Misrepresentations of FDA’s Level of Review for Cell Phone and Wireless Radiation Safety.](#)

### **Misrepresentation #13: The FDA misrepresents its level of review of 5G technology, communicating that 5G technology is safe.**

Fact: FDA’s Dr. Shuren sent letters to members of Congress responding to requests regarding the potential health effects of 5G networks, which create the illusion that the FDA has evaluated 5G technology and determined 5G technology is safe. First, the FDA has no authority in regards to RFR emissions from cell tower antennas, and omitted this fact in its response to

members of Congress. Further, the FDA has never publicly released any reports focused on 5G modulations, nor systematically reviewed scientific citations specific to 5G technology emissions. As an example, in the FDA's 2020 Literature Review the word "5G" is absent, and none of the studies the FDA reviewed were noted to specifically include 5G modulations.

While it is true that 5G networks will utilize frequencies covered in earlier technology generations (and frequencies considered in the FDA's literature review), many 5G networks will also include higher frequencies, new technologies, and more complex signal characteristics and antenna systems. Furthermore, 5G networks will rely on hundreds of thousands of densified new "small cell" towers that are part of a 5G technosphere that includes **billions** of "smart" wireless devices — Internet of Things — all of which will exponentially increase ambient environmental RF exposures compared to pre-5G generations of wireless technology. Yet the FDA misrepresents that safety is assured, as it has not shown any review of both the increased daily RF exposure, nor the specific impacts of 5G technology modulation on humans and the environment.

Here are examples of the FDA misrepresenting their level of review of 5G.

1. The FDA's webpage [Scientific Evidence for Cell Phone Safety](#) has a section about 5G entitled "[No New Implications for 5G](#)" which starts out stating the FDA is "responsible" and then concludes by asserting that the FDA is "monitor[ing] the science":  
*"The FDA is responsible for, among other things, ensuring cell phones – and any radiation-emitting electronic product – are safe for the public to use. This includes understanding the health risks (if any) of new electronic products that emit radiation as they become widely available to the U.S. public, such as 5G cell phones. While many of the specifics of 5G remain ill-defined, it is known that 5G cell phones will use frequencies covered by the current [FCC exposure guidelines](#) (300 kHz-100 GHz), and the conclusions reached based on the current body of scientific evidence covers these frequencies. The FDA will continue to monitor scientific information as it becomes available regarding the potential impacts of 5G."*
2. The [FDA sent a Sept 9, 2019 letter to Representative Anna Eshoo and Senator Jeff Merkley](#) purporting that FDA has reviewed the research and determined safety, even for 5G. The FDA's statements will all result in the reader being satisfied that the FDA has reviewed and is continuing to monitor the research on 5G and has determined it is safe. The FDA letter states:
  - a. *"We appreciate the opportunity to provide an overview of the substantial body of evidence that has informed our determination that the current safety standard for RFR exposure remains appropriate."*
  - b. *"The Agency's ongoing evaluations include but are not limited to those frequencies currently being used by cell phones as well as those being considered for future uses (e.g., 5G)."*
3. In the letter there also is a one-paragraph section entitled, "No New implications for 5G" that details how 5G frequencies are non-ionizing with a "current body of scientific evidence" that has been well understood for many years" and concludes:

- a. *“Based on this information, the new 5G technologies are unlikely to pose additional risks to health for individuals. FDA will continue to monitor scientific information as it becomes available regarding the impacts of 5G.”*

For the full documentation on the FDA’s misrepresentations regarding their review of 5G technology please go to Misrepresentation #13 in [FDA’s Misrepresentations of FDA’s Level of Review for Cell Phone and Wireless Radiation Safety](#).

### **FDA’s Critical Omissions on Cell Phone and Wireless Radiation**

Hand in hand with FDA’s misrepresentations are the FDA’s critical omissions. Members of Congress and elected officials, government agency staff, the public and media do not understand the complexity of this issue and thus are unaware of the full landscape in regards to EMFs. If they were made aware of the information the FDA omits, they would see the lack of accountability at the federal level on this issue. They would understand that the FDA cannot offer a full safety assurance, as it does not even have full authority in regards to the issue.

#### **FDA’s omissions related to FDA’s role and authority in regards to EMFs.**

1. FDA has only presented activities in relation to electronic devices such as cell phones- not other wireless devices such as routers, laptops, security systems, Wi-Fi, Bluetooth, cell towers, OTARD devices, etc. However, according to the Food, Drug, and Cosmetic Act, the FDA could be addressing all consumer electronic devices, not just cell phones. Yet the FDA seems to have chosen to ignore other devices.
2. FDA omits that it has no authority in regards to telecommunications infrastructure such as cell towers, or 5G/4G “small” cell towers and the FDA has done no science based review on health effects from the cumulative emissions of this equipment.
3. FDA omits that it has no authority nor expertise regarding impacts to wildlife or natural environment (i.e. trees, plants) and not reviewed adverse effects to flora and fauna.

#### **FDA’s omissions related to FDA’s level of review regarding EMFs.**

1. FDA omits it has not shown review of science on non-cancer effects.
2. FDA omits it has not shown review of science in relation to 5G technology.
3. FDA omits it has not performed a public risk analysis of RFR.
4. FDA omits it has not analyzed the FCC limits in relation to the current body of science.
5. FDA omits that no other federal health and safety agency is actively engaged on this issue.

#### **FDA omits it has not engaged in activities regarding magnetic field EMFs.**

1. FDA omits that it has authority to regulate both RFR **and magnetic field EMF emissions** from consumer electronic devices according to the [Federal Food, Drug,](#)

[and Cosmetic Act](#) refers to “**electronic product radiation.**” However the FDA seems to have chosen only to address RFR emissions and has shown no activities in relation to the scientific review of health effects from magnetic field EMF.

2. FDA omits that it has not reviewed the science on health effects from magnetic field electromagnetic exposure.
3. FDA omits how the public can reduce exposure to magnetic field or ELF EMF.

**FDA omits extensive information to the public on how and why to reduce EMF exposure.**

1. FDA omits that hundreds of scientists are warning that FCC limits are not adequate protective and that the public should reduce exposure. Instead FDA downplays science indicating risk and communicates that reducing exposure is not necessary.
2. FDA omits science indicating children and the fetus are more vulnerable as their rapidly developing brains are more sensitive.
3. FDA omits numerous strategies to reduce cellphone radiation exposure and instead only presents a list of [just 4 ways](#) to reduce cell phone radiation.
4. FDA omits a robust list of sources of RFR exposure - all the ways that people are exposed from cell towers, to video games, to phones to Wi-Fi printers.
5. FDA omits strategies to reduce exposure from wireless, Bluetooth and Wi-Fi devices such as speakers, gaming consoles, Wi-Fi routers and baby monitors.
6. FDA omits that issuing wired internet and telephone connections eliminates RFR exposure.
7. FDA omits reference to scientific research showing adverse effects from exposure.

**FDA omits critical information related to the NTP study findings and FDA’s involvement.**

1. FDA omits that the findings of an adverse effect at non thermal exposure levels means that the basis for FCC limits is no longer valid.
2. FDA omits the actual findings of the NTP studies - increased brain and heart tumors, DNA damage and heart damage, and also omits the conclusion of “clear evidence of cancer” in male rats.
3. FDA omits that it has known the NTP design for years - to test the assumption that heat is the relevant factor - and yet the FDA has never contacted the NTP to communicate that the animal study the FDA asked for was irrelevant to understanding effect to humans.
4. FDA omits that it did not offer comments during the NTP peer review in March 2018.

**FDA omits that the advisory and interagency groups thought to be addressing this issue are in fact defunct and have not reviewed the RFR health issues.**

1. FDA Omits that the Radiofrequency Interagency Work Group (RFIAWG) is defunct and quietly removed references off its website.
2. FDA omits that the FDA's advisory committee - the Technical Electronic Product Radiation Safety Standards Committee - has not reviewed the RFR nor EMF health issues, and has not met since 2016, having 9 vacancies.

The numerous implications of these omissions regarding the advisory and interagency groups are far reaching because wireless companies put forward the groups as active-communicating a false illusion of safety and a collaboration and oversight that does not exist.

Below, industry consultant Jerrold Bushburg presented an "Introduction to Potential Health Considerations of 5G Networks" at the Beverly Hills California Health and Safety Commission Meeting on February 24, 2020 and referenced the RFIWG *despite the fact that it is defunct* (See [Agenda](#), [Watch video](#), See [full transcript](#)). He presented a slide about the group and stated:

*Minute 1:08:20 "It's now 2020, whose taking account of the current science because the NCRP has not been asked to update this report since it was issued and that is the job of the federal interagency agency working group for RF safety surveillance [referring to the RFIWG in a slide at minute 1:08:54]. Their members include individuals from the EPA, FDA NIOSH, OSHA and the FCC and this group meets six times a year, either by person or tele conference. Primarily just to review what is going on around the world and they go to meetings and ask the question whether they think the standards in the US are still reasonable and in-line with what is happening around the world."*

## **Federal Interagency Agency Working Group (RF Safety Surveillance)**

- **Environmental Protection Agency: (EPA)**
- **Food and Drug Administration: (FDA)**
- **National Institute of Occupational Health & Safety (NIOSH)**
- **Occupational Health and Safety Administration (OSHA)**
- **Federal Communication Commission (FCC)**
- **This Group meets/teleconference 6 times per year**

As the FDA has also omitted a robust presentation on sources of RF exposure and on how to reduce RFR exposure, the public is fully unaware of the numerous ways to reduce exposure and engage in behaviors that increase their exposure unknowingly.

The full details and documentation on this issue can be found in the section FDA's critical omissions [FDA's Misrepresentations of FDA's Level of Review for Cell Phone and Wireless Radiation Safety](#).

### **The FDAs Lack of Transparency in Regards to Its Activities and Policies**

The FDA has repeatedly refused to respond to letter from government entities, members of Congress and scientists who have written with questions directly addressing the FDA's activities and level of review. For example:

- **The New Hampshire State Commission on 5G** [wrote to the FDA](#) with several questions, but the FDA responded without directly addressing the questions and instead presented a cursory opinion with just a few paragraphs.
- **Numerous scientists**, including Dr. Ronald Melnick, [wrote the FDA in 2020](#) with questions as well as for a retraction of the FDA literature review. In these letters Dr. Melnick specifically documented the inaccurate information and asked for corrections. The only response was from FDA's Dr. Jeffrey Shuren in a [March 24, 2020 letter](#) to EHT's Theodora Scarato with one sentence that said, *"thank you for sharing your and your colleagues' concerns with. We appreciate your feedback." The corrections have not been made.*
- When the Office of Senator Tammy Baldwin wrote the FDA with specific questions, the FDA responded with a [September 8, 2020 letter](#) that ignored the specific questions but instead stated that:

*"The FDA published a detailed literature review of all scientific evidence that has become available for over the past decade and updated our webpages related to all aspects of radiofrequency radiation from cellphones [thus misrepresenting the FDA level of review] Based on this extensive risk analysis [again misrepresenting the FDA's level of review], our determination remains consistent that there is no scientific evidence that warrants a change in cell phone safety limits, and that there is insufficient evidence to demonstrate a causal link between cell phones and cancer in the population. We believe that all of the questions contained in your constituent's letter are answered in the publicly available information [although this is not the case, as the questions to the FDA in that letter are not answered on the website at all], and I have included links below to the relevant information."*

- **EHT Executive Director Theodora Scarato has repeatedly written to the FDA** asking for answers to follow up questions from her years of email communications and the FDA states they will no longer respond.

[See the questions here in Scarato email communications to the FDA.](#)

Examples of questions that remain unanswered by the FDA include:

- In light of the French government tests showing excess radiation from phones at body contact, what steps is the FDA taking to address the fact that cell phones and wireless devices have RFR levels that exceed FCC limits when devices are placed at body contact?
- What FDA scientific review substantiates the FDA's statement concerning the safety factor?
- Why is the FDA ignoring the fact that the NTP exposure levels were comparable to FCC's localized public SAR limits and all of them were within occupational localized SAR limits.
- We would like to know why the FDA has not taken action to inform the public about the separation distances that cell phones should be from the body in light of published [analysis](#).
- Does the FDA have a specific SAR level that will trigger a FDA action?
- Will there be any premarket safety testing for 5G technology by the FDA to understand the long term effect on human health?
- When did the FDA do a systematic review of the scientific evidence to evaluate impacts on human health?
- The DNA and tumor findings of the NTP indicate non thermal effects from long term exposure as the animals were exposed at levels considered "non thermal. " What is the process by which the FDA is going to integrate this information regarding non thermal exposures into an opinion of the safety of exposure limits for RFR both occupational and for the public?

### **The Nationwide Impact of the FDA's Misrepresentations, Omissions and Lack of Transparency is Serious and Deleterious**

The FDA's lack of clear policy has led to a cascade of policy decisions and court rulings that put the public in harm's way. Representative Anna Eshoo and Senator Jeff Merkley described the far reaching impact of FDA's information in their letter to the FDA requesting the FDA's science review of 5G and wireless networks that:

*"While FDA does not have premarket review authorities for cell phones, its information is used by the Federal Communications Commission to set the standards for exposure limits of radiation from cell phones, which cell phone manufacturers must follow. Second, the public relies on conclusions published on FDA's website. Third, scientists and researchers use this information to assess methodologies and to inform their own research questions"*

Elected officials, the military and agencies at the local, state and federal level are being influenced by the FDA's information and making policy decisions on the myths created by the FDA misinformation.

Below are a few examples for federal, state, local, media, medical and public implications. Extensive documentation on each of these issues can be found in the section "The Nationwide Impact of the FDA's Misrepresentations, Omissions and Lack of Transparency is Serious and Deleterious" in [FDA's Misrepresentations of FDA's Level of Review for Cell Phone and Wireless Radiation Safety](#).

**Federal Policy:** The fact that the FDA misrepresented its level of scientific review and risk assessment regarding the science on non-cancer health effects to the FCC led to the FCC's 2019 refusal to update FCC's 1996 human exposure limits. The FCC used the FDA's website, public statements and the FDA's [April 24, 2019 letter](#) (that has one paragraph on RFR limits) to support the FCC's 2019 determination (after a six-year inquiry) that the FCC's 1996 human exposure limits for RFR did not need to be changed.

Despite the fact that FCC's RFR limits are based on the assumption that heating is the only harm and do not protect against biological effects and despite the fact that the \$30M National Toxicology Program (NTP) study confirmed in a highly controlled study that RFR can cause cancer and DNA damage at non heating levels challenging the basis for the FCC's 1996 limits, the FDA entirely dismissed the study and downplayed the results to the FCC, the American public, and Congressional officials. In turn, the FCC affirmed its 1996 limits in 2019.

The FCC's human exposure limits are relied upon by every level of government as proof of safety. This is why the FDA's misrepresentations must be urgently addressed.

Although the August 13, 2021, the United States Court of Appeals for the District of Columbia Circuit [judgement](#) found the FCC's reliance on the FDA's information as "arbitrary and capricious," it is possible that the FDA could decide to *again misrepresent the science to the FCC* as it previously did regarding the NTP study and cancer. The FDA must clarify its policy in regards to RFR to ensure the FCC has complete information in its upcoming response to the court mandate.

**Lack of Oversight:** FDA's misrepresentations have resulted in a lack of appropriate oversight in Congress. The Congressional Committees tasked to provide oversight aren't even aware this issue is in need of oversight. Notably [Senator Tammy Baldwin](#), [Senator Feinstein](#) and [Senator Merkley](#) are all members of the U.S. Senate Committee on Appropriations Subcommittee Agriculture, Rural Development, Food and Drug Administration, and Related Agencies that have oversight of the FDA, and all have written letters void of action to ensure accountability on the issue.

An example of how elected officials inaccurately believe there is oversight and accountability on the issue is showcased in [U S. Representative Scott Fitzgerald](#) November 5, 2021 letter which erroneously states that, "*In addition to the FCC, Federal health and safety agencies such as the Environmental Protection Agency (EPA), the Food and Drug*

*Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) have been actively involved in monitoring and investigating issues related to radio frequency (RF) exposure.”*

**Congress Repeating FDA’s Misrepresentations:** In fact, members of U.S Congress are so misled, that they are communicating erroneous information to their constituents related to the FDA’s level of review as detailed in this Declaration in the section “[Influence to Congress](#).”

An example of how the FDA’s misinformation has propagated false illusions of safety leading to members of Congress asserting nonfactual statements based on the FDA’s misinformation is illustrated by the case of Representative Anna Eshoo and Senator Jeff Merkley’s communications with the FDA.

- On July 18, 2019, Representatives Anna Eshoo and Senator Jeff Merkley wrote a [letter](#)<sup>61</sup> to the FDA asking the agency details about the scientific review the FDA purportedly did to determine 5G and wireless radiation was safe and that RFR limits were protective.
- On September 9, 2019 the FDA responded with a [letter](#)<sup>62</sup> filled with misrepresentations and critical omissions - as discussed in this Declaration - which created the impression that the FDA had reviewed the full body of science re: FCC’s RFR limits and concluded 5G is safe.
- In turn, on September 20, 2019, Representatives Eshoo and Senator Jeff Merkley sent [a letter](#)<sup>63</sup> to a constituent that “*the agency concludes that the current RFR safety limits for cellphones are acceptable to protect public health. These conclusions hold for 5G technologies.*”

As substantiated in detail in this Declaration, the elected officials’ statements are inaccurate because the FDA has not made public any science based analysis of the FCC’s RFR limits, nor shown any systematic review of the full body of research on health effects from wireless, much less 5G.

### **Policy Fast Tracking 5G into Neighborhoods and Wireless Networks into Schools:**

The FDA’s misrepresentations have led to policy that allows the unchecked proliferation of 4G/5G wireless devices and infrastructure - millions of new "small cell" installations in close proximity to U.S. homes and schools. Officials at every level of government ignore calls for protective policy because of the FDA’s false safety assurances. Instead of enacting policy to minimize exposure, they support policy to densify networks.

---

<sup>61</sup> “U.S. Senator Richard Blumenthal and U.S. Representative Anna G. Eshoo (CA-18) Letter to Federal Communications Commission Commissioner Brendan Carr About 5G Health Hazards.” December 9, 2018, <https://ehtrust.org/u-s-senator-richard-blumenthal-and-u-s-representative-anna-g-eshoo-ca-18-letter-to-federal-communications-commission-commissioner-brendan-carr-about-5g-health-hazards/>.

<sup>62</sup> “FDA Response to Representative Eshoo,” September 9, 2019. <https://ehtrust.org/wp-content/uploads/FDA-letter-to-eshoo-re-cell-phone-rf-safety.pdf>.

<sup>63</sup> “U.S. Senator Richard Blumenthal and U.S. Representative Anna G. Eshoo (CA-18) Letter to Federal Communications Commission Commissioner Brendan Carr About 5G Health Hazards.” December 9, 2018. <https://ehtrust.org/u-s-senator-richard-blumenthal-and-u-s-representative-anna-g-eshoo-ca-18-letter-to-federal-communications-commission-commissioner-brendan-carr-about-5g-health-hazards/>.

As one of several examples, Montgomery County Maryland Councilman Hans Riemer, who pushed legislation allowing 5G cell antennas 30 feet away from homes and schools without routine notice of public hearing - a common type of industry-friendly policy being financed in local municipalities - repeatedly discussed how federal agencies had reviewed the science and determined 5G cell towers were safe - reiterating FDA's misinformation in [tweets](#), [statements during Council meetings](#), and [newsletters](#) to his constituents.

As an example, [Councilman Riemers July 28, 2021 newsletter](#) reads:

**“What do leading public health authorities say about cell phones and 5G?”**

Safety comes first. Fortunately, the science on wireless waves is compelling. The leading national and international scientific institutes continue to find that cell phones are not linked to health problems. The FDA, which we are proud to have located here, reviews the existing studies and puts them all into a balance. The FDA clearly says, the “weight of scientific evidence has not linked cell phones with any health problems.”

**Other Federal Agencies:** Health and safety agencies reference the inaccurate FDA information reiterating a false narrative of safety.

For example in June 2020, the National Cancer Institute released an article on the FDA Literature Review that was titled [“FDA Says Data Doesn’t Link Cell Phones to Cancer”](#) that says, “*Is there any reason to worry? The best evidence says no.*”

The National Cancer Institute’s [Cell Phone Radiation page](#) references the FDA rejection of the NTP and states, “*The [US Food and Drug Administration \(FDA\)](#) notes that studies reporting biological changes associated with radiofrequency radiation have failed to be replicated and that the majority of human epidemiologic studies have failed to show a relationship between exposure to radiofrequency radiation from cell phones and health problems.*”

A heartbreaking example of how the FDA’s misleading information leads to false safety assurances that are then amplified by government agencies which in turn impacts the public, can be found in the case of the middle school student who wrote a US government scientist requesting a campaign for safer cell phone use in light of the NTP study findings of cancer in 2016.

The National Cancer Institute (NCI) was sent [a letter by a Middle Schooler](#) asking why the agency is not starting a campaign for safe cell use: “*For my final project I am researching about the health effects of radiofrequency radiation given off by cell phones. As seen through your research the radiofrequency radiation given off by cell phones can cause cancer and or tumors in the head, neck and heart lab rats. However there are no PSAs or any commercials to inform the public about this topic which is why I am writing to you.*”

In response the NCI [wrote back](#), *“We hope you will understand that, as a research agency, the National Cancer Institute does not conduct public awareness campaigns. In addition, the US Food and Drug administration shares responsibility for cell phones with the FCC. Although cell phones can be sold without FDA clearance or approval the agency monitors the effects the phones have on health. FDA has the authority to take action if cell phones are shown to admit RF energy at a level that is hazardous to the user.”*

The letter could have been a pivotal moment when the NCI and NIH considered the need for more public information on *how to reduce cell phone radiation*. Instead, this student was sent to the FDA website (with minimal steps on how to reduce exposure and void of the most important steps which include using wired rather than wireless technology) and provided information which downplayed the study findings. The NCI and NIH never updated its page to share more information on how to reduce exposure.

**Armed Forces:** Members of our armed forces are using numerous wireless devices as part of their job, and due to the FDA’s mis-information will remain unaware of any potential health effects they might be experiencing. As an example, the U.S. Army Public Health Command has a [cell phone fact sheet](#) that references the FDA as periodically reviewing the research, stating:

“Who decides whether cell phones are safe? Subject matter experts from the Food and Drug Administration (FDA), the Federal Communications Commission (FCC), the Environmental Protection Agency, the National Cancer Institute, the Department of Defense, the Institute of Electrical and Electronics Engineers (IEEE) and others periodically review the research data to see if there are any potential health effects from RFR... These agencies have declared publicly that cell phones conform to published standards and are safe.”

**The Media Amplifies Expands the False Illusion of Safety:** The media, the public, government officials, medical professionals and even the Courts are provided false safety assurances and repeat and amplify the FDA's misrepresentations with additional unfactual information they assume to be true. The FDA does not offer corrections to the clear false statements that were borne of the FDA misrepresentations. Because media references the FDA’s misrepresentations as a source of credible information and the public believes safety is assured.

In 2018, [CNN](#), [Scientific American](#), [Reuters](#), [New York Times](#), [Science](#), [Forbes](#) and [Medscape](#) all featured how the FDA “disagreed” with the “clear evidence of cancer” conclusions of the National Toxicology Program. Medscape’s [headline](#) exemplified the media coverage: “Cancer Fears Over Cell Phones, Again, but FDA Disagrees.” [The Verge coverage](#) read, “the FDA is still confident that the current limits on cell phone radiation are safe.” The [Daily Mail headline](#) read, “*FDA insists cell phones ARE safe - despite new government study that found 'clear evidence' of link to heart and brain cancers in rats.*”

**Court Proceedings Hinge on FDA’s Misrepresentations:** The FDAs misleading presentations have led to major court rulings in favor of industry and against the public’s right to know. As an example, the FDA has repeatedly [asserted](#) there is a “large safety margin” for cell

phone radiation limits and then followed with a sentence about how RFR limits have a 50 times safety factor. However, the FDA never clarifies that they are in fact referring to *two different types of regulations, confusing the reader*. While both of these FCC regulations are based on the *heating is the only harm* assumption (proven wrong by the NTP study and other research not adequately reviewed by the NTP), even if this assumption were true, the cell phone FCC premarket cell phone radiation test localized regulatory limits **do not have a 50 fold safety factor for brain tissue** as a factual matter. The self appointed small invite only group that calls itself the International Commission on Non-Ionizing Radiation Protection (ICNIRP) states in their latest [2020 guidelines](#) (based only on thermal effects) that for Type 2 tissues **such as the head** the local adverse health effect threshold is a SAR of 20 W/kg averaged over 10 g. *Therefore, the reduction factors in the 2020 ICNIRP guidelines are 2 (occupational local exposures) and 10 (general public local exposures) - not 50.*


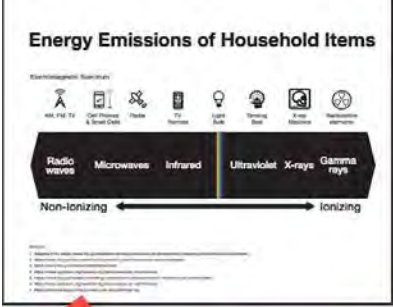
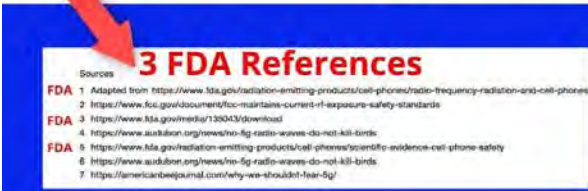

However due to the FDA misrepresentations (of the safety factor and its misrepresentation that it evaluated the scientific evidence and FCC limits), the FCC and in turn, even the wireless companies put forward inaccurate information.

For example, in court proceedings for [Cohen v. Apple](#), Apple's brief inaccurately [stated](#) that there is a "50-times" safety factor for local cell phone radiation limits. This inaccurate information, combined with the FCC's ["safety determination"](#), led to the Court's ruling in favor of Apple. In *Wireless Ass'n v. City of Berkeley* the FDA's misleading information was again used by the FCC in their [statement to the Court effectively halting](#) implementation of the Berkeley Cell Phone Right To Know law. On September 17, 2020, the Court [found](#) the Berkeley Ordinance preempted by the FCC's 2019 RF limit affirmation, because the FCC had determined that even if wireless devices produce RF exposure that would be in excess of FCC limits, the FDA had concluded that exposure would be well below levels considered dangerous. The September [ruling](#) specifically cited the FDA stating, "*The FDA maintains that 'the weight of scientific evidence has not linked cell phones with any health problems' and that 'the current safety limits for cell phones are acceptable for protecting the public health.'*"

**Industry Avoids Accountability:** The wireless industry is using the FDA's misrepresentation to shield themselves from accountability. Wireless companies are able to cite the FDA as proof of safety and avoid accountability in legal actions for harms to people and the environment from their RFR-emitting devices and networks. Wireless companies use the FDA and FCC limits to avoid regulations. For example, they put forward FDA's misrepresentations when cities are considering setbacks for cell towers in residential areas, or when states are considering labeling wireless devices.

See below a table of with key examples of how the FDA's contradictory and misleading information is used by the wireless industry to promote the false narrative that cell phones, Wi-Fi devices, cell towers and 5G have been deemed safe after a robust safety review by the FDA.

Wireless Industry Document	Documentation on How FDAs Misrepresentations are Augmented, Expanded and Amplified into Sweeping Unsubstantiated Conclusions
<p>CTIA Consumer Website  <a href="http://WirelessHealthFacts.org">Wireless Health Facts- Wirelesshealthfacts.com</a></p>	<p><b>FDA’s Misrepresentations in CTIA Statements</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data.</a>  #2: <a href="#">The FDA’s Literature Review is a scientifically valid risk assessment.</a>  #6: <a href="#">The NTP study is irrelevant to human health.</a>  #7: <a href="#">The FDA has evaluated FCC’s RFR limits.</a>  #8: <a href="#">The FDA “continuously monitors the science.</a></p> <p><b>Statement by CTIA</b></p> <p><i>“Are cellphones, cell towers, small cells and antennas safe?</i></p> <p><i>[Answer] Radiofrequency energy from wireless devices and networks, including radiofrequencies used by 5G, have not been shown to cause health problems, according to the international scientific community. To cite one example, the Food and Drug Administration <a href="#">said</a>, “Based on the FDA’s ongoing evaluation, the available epidemiological and cancer incidence data continues to support the Agency’s determination that there are no quantifiable adverse health effects in humans caused by exposures at or under the current cell phone exposure limits.”</i></p> <p><i>“The Food and Drug Administration has also said that “the existing safety limits for cell phones remain acceptable for protecting the public health.”</i></p> <p><i>“Cell phones don’t cause cancer FDA says”</i></p> <p><i>“After reviewing the [National Toxicology Program] study, the Food and Drug Administration agreed, saying that “the existing safety limits for cell phones remain acceptable for protecting the public health.”</i></p>
<p><a href="#">Verizon’s Consumer Information Page</a></p>	<p><b>FDA’s Misrepresentations in Verizon Statements</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #10: <a href="#">Children and pregnant women are adequately protected by FCC RFR limits.</a></p> <p><b>Verizon Statements</b></p>

	<p><i>“Do Wireless Phones Pose Any Special Risks to Children?: The FDA/FCC website states that ‘the scientific evidence does not show a danger to users of wireless communication devices including children.’”</i></p>
<p>Verizon’s “Facts About RF Energy” <a href="#">brochure</a></p>	<p><b>FDA’s Misrepresentations in Verizon Statements</b></p> <p>#1: <a href="#">The FDA evaluated the “totality” of scientific data</a></p> <p>#2: <a href="#">The FDA’s Literature Review is a scientifically valid risk assessment.</a></p> <p>#8: <a href="#">The FDA “continuously monitors the science.</a></p> <p>#10: <a href="#">Children and pregnant women are adequately protected by FCC RFR limits.</a></p> <p>#13: <a href="#">The FDA scientifically reviewed the safety of 5G technology</a></p>     <p><b>Separating the myths from the facts</b></p> <p><b>MYTH:</b> 5G is new and has not been researched.</p> <p><b>FACT:</b> Scientists in the U.S. and around the world have conducted research on RF energy for decades. In December 2019, in a unanimous and transparent decision, the FCC affirmed that the same RF safety rules that apply to 4G LTE apply to 5G. The FCC’s decision was a lengthy proceeding, it considered all the input from agencies and independent scientists, and it was based on the best available science. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects.</p> <p><b>MYTH:</b> 5G use of millimeter wave spectrum is harmful.</p> <p><b>FACT:</b> RF energy exists all around us, from the radio waves that power your cell phone to the microwaves that heat your food. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects.</p> <p><b>MYTH:</b> 5G is new and has not been researched.</p> <p><b>FACT:</b> Scientists in the U.S. and around the world have conducted research on RF energy for decades. In December 2019, in a unanimous and transparent decision, the FCC affirmed that the same RF safety rules that apply to 4G LTE apply to 5G. The FCC’s decision was a lengthy proceeding, it considered all the input from agencies and independent scientists, and it was based on the best available science. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects.</p> <p><b>MYTH:</b> 5G use of millimeter wave spectrum is harmful.</p> <p><b>FACT:</b> RF energy exists all around us, from the radio waves that power your cell phone to the microwaves that heat your food. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects.</p> <p><b>MYTH:</b> 5G is new and has not been researched.</p> <p><b>FACT:</b> Scientists in the U.S. and around the world have conducted research on RF energy for decades. In December 2019, in a unanimous and transparent decision, the FCC affirmed that the same RF safety rules that apply to 4G LTE apply to 5G. The FCC’s decision was a lengthy proceeding, it considered all the input from agencies and independent scientists, and it was based on the best available science. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects.</p> <p><b>MYTH:</b> 5G use of millimeter wave spectrum is harmful.</p> <p><b>FACT:</b> RF energy exists all around us, from the radio waves that power your cell phone to the microwaves that heat your food. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects. The FCC’s decision is based on the fact that there are no credible scientific studies that show that 5G radio waves cause health effects.</p>
<p><a href="#">Samsung’s Health and Safety Information</a></p>	<p><b>FDA’s Misrepresentations in Samsung Statement</b></p> <p>#1: <a href="#">The FDA evaluated the “totality” of scientific data</a></p>

	<p>#3: <a href="#">The FDA has evaluated the science on specific non-cancer effects such as oxidative stress, impacts to reproduction and people with electromagnetic sensitivity.</a></p> <p><b>Samsung Statements</b>  <i>“The FDA publication includes the following information: Do cell phones pose a health hazard? Many people are concerned that cell phone radiation will cause cancer or other serious health hazards. The weight of scientific evidence has not linked cell phones with any health problems.”</i></p>
<p><a href="#">T-Mobile’s RF Safety Webpage</a></p>	<p><b>FDA’s Misrepresentations in T-Mobile Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #3: <a href="#">The FDA has evaluated the science on specific non-cancer effects such as oxidative stress, impacts to reproduction and people with electromagnetic sensitivity.</a>  #8: <a href="#">The FDA “continuously monitors the science.</a></p> <p><b>T-Mobile Statements</b>  <i>“Based on scientific data currently available, T-Mobile has not determined that RF energy from wireless phones causes health risks. Nonetheless, we want our customers to be informed as the wireless industry and government agencies continue to monitor the ongoing scientific research on this important subject.”</i></p> <p><i>“The FDA, based on current data, “believes that the weight of scientific evidence does not show an association between exposure to radiofrequency from cell phones and adverse health outcomes.”</i></p>
<p><a href="#">AT&amp;T’s Information on Wireless and Health Webpage</a></p>	<p><b>FDA’s Misrepresentations in AT&amp;T Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #3: <a href="#">The FDA has evaluated the science on specific non-cancer effects such as oxidative stress, impacts to reproduction and people with electromagnetic sensitivity.</a></p> <p><b>AT&amp;T Statement</b>  <i>“The U.S. Food and Drug Administration (FDA) also has authority and expertise with respect to radio frequency fields and health, and has provided the FCC its expert views. The FDA concludes on its <a href="#">website</a>: ‘The weight of scientific</i></p>

	<p><i>evidence has not linked cell phones with any health problems. ”</i></p>
<p>Crown Castle 2021  <a href="#">Understanding the Safety of 5G</a></p>	<p><b>FDA’s Misrepresentations in Crown Castle Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #7: <a href="#">The FDA has evaluated FCC’s RFR limits.</a>  #9: <a href="#">There is “scientific consensus” that RFR radiation is safe.</a>  #13: <a href="#">The FDA scientifically reviewed the safety of 5G technology</a></p> <p><b>Crown Castle Statement</b>  <i>“The research is clear. The consensus of nearly seven decades of research by many of the top scientific and health communities, including the FDA, is that electromagnetic emissions at the levels allowed by FCC regulations are safe.”</i></p>
<p>GSMA Handbook on <a href="#">5G, EMF Exposure and Safety</a></p> <p>The GSM Association is an industry organization that represents the interests of mobile network operators worldwide.</p>	<p><b>FDA’s Misrepresentations in GSMA Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #13: <a href="#">The FDA scientifically reviewed the safety of 5G technology</a></p> <p><b>GSMA Statement</b></p> <p>Under the section “<i>Is 5G Carcinogenic</i>”:</p> <p><i>“In February 2020 , the US Food and Drug Administration in a review of animal and epidemiological studies of radio signals and cancer concluded that:</i>  <i>‘To date there is no consistent or credible evidence of health problems caused by the exposure to radio frequency energy emitted by cell phones’.</i>”</p>
<p>EMF Explained- A Website of the Australian Mobile Telecommunications Association - Webpage “<a href="#">US National Toxicology Program Study Results Published</a>”</p>	<p><b>FDA’s Misrepresentations in Australian Mobile Telecommunications Association Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #7: <a href="#">The FDA has evaluated FCC’s RFR limits.</a>  #6: <a href="#">The NTP study is irrelevant to human health.</a></p> <p><b>Australian Mobile Telecommunications Association Statement</b></p> <p><i>“The Food and Drug Administration (FDA) has reviewed the NTP report and issued a <a href="#">statement</a>.</i>  <i>We respect the recently released research conducted by our colleagues at the National Toxicology Program (NTP), which is part of the National Institute of Environmental Health</i></p>

	<p><i>Sciences within the National Institutes of Health, on radiofrequency energy exposure. When we nominated this topic for study in 1999, there were limited epidemiological and long-term animal studies investigating the effects of radiofrequency energy exposure from cellular phones. Fortunately, since then, there have been hundreds of studies from which to draw a wealth of information about these technologies which have come to play an important role in our everyday lives.</i></p> <p><i>Taken together, all of this research provides a more complete picture regarding radiofrequency energy exposure that has informed the FDA’s assessment of this important public health issue, and given us the confidence that the current safety limits for cell phone radiation remain acceptable for protecting the public health.</i></p> <p><i><a href="#">Click here for the FDA statement”</a></i></p>
<p>Verizon Improve Your Wireless North Carolina <a href="https://improveyourwireless.com/northcarolina/">https://improveyourwireless.com/northcarolina/</a></p>	<p><b>FDA’s Misrepresentations in Verizon Statements</b></p> <p>#1: <a href="#">The FDA evaluated the “totality” of scientific data</a></p> <p>#8: <a href="#">The FDA “continuously monitors the science.</a></p> <p>#10: <a href="#">Children and pregnant women are adequately protected by FCC RFR limits.</a></p> <p>#13: <a href="#">The FDA scientifically reviewed the safety of 5G technology</a></p> <p><b>Verizon Statement</b></p> <p><i>“Are small cells safe?</i></p> <p><i>The Federal Communications Commission, in consultation with multiple federal agencies, sets federal government safety standards regarding small cells. Those standards have wide safety margins and are designed to protect everyone, including children, and were established after close examination of research that scientists in the US and around the world conducted for decades. The research continues to this day, and agencies continue to monitor it. Scientists have studied potential health effects of RF emissions from cell phones for decades. Based on all the research, federal agencies have concluded that equipment that complies with the safety standards poses no known health risks. And advisers to the World Health Organization have specifically concluded that the same goes for 5G equipment. In fact, the RF safety standards adopted by the United States Federal Communications Commission (FCC) are even more conservative than the levels adopted by some international standards bodies.</i></p>

	<p>FCC: The FCC provides information about the safety of RF emissions from cellular base stations on its website at: <a href="http://www.fcc.gov/oet/rfsafety/rf-faqs.html">http://www.fcc.gov/oet/rfsafety/rf-faqs.html</a>.</p> <p>FDA: The Food and Drug Administration's <a href="#">Cell phone website</a>..."</p>
<p>VERIZON PUBLIC HEARING ON 9/22/21 AT 6PM Glendale California: <a href="#">9/22/21 testimony</a></p>	<p><b>FDA's Misrepresentations in Verizon Hearing</b></p> <p>#1: <a href="#">The FDA evaluated the "totality" of scientific data</a>  #7: <a href="#">The FDA has evaluated FCC's RFR limits</a>.  #9: <a href="#">There is "scientific consensus" that RFR radiation is safe</a>.</p> <p><b>Statements on Record</b></p> <p><i>"The RF exposure limits were set by the FCC in 1996, at the direction of Congress, and were reaffirmed in 2019. All FCC-regulated small cells must comply with the FCC's RF limits. As such, ExteNet's installations adhere to those standards. The public limit incorporates a fifty times safety factor, that is, the limit is set fifty times below the level where the scientific consensus shows that there may be observable effects on humans. So, with the large safety factor in place, there are anticipated no observable effects at sites that are below the FCC limits... In addition, many household items, including microwave ovens, wireless modems, and televisions emit RF emissions and are deemed safe for everyday consumer use by the U.S. Food and Drug Administration."</i></p>
<p><a href="#">Smartlink LLC on behalf of AT and T, for City of Independence California</a>, Staff Report May 27, 2020</p>	<p><b>FDA's Misrepresentations in Smartlink Statement</b></p> <p>#1: <a href="#">The FDA evaluated the "totality" of scientific data</a>  #7: <a href="#">The FDA has evaluated FCC's RFR limits</a>.  #8: <a href="#">The FDA "continuously monitors the science"</a>.</p> <p><b>Smartlink Statement</b></p> <p><i>"The FCC regulates RF emissions to ensure public safety. Standards have been set based on peer reviewed scientific studies and recommendations from a variety of oversight organizations, including the National Council on Radiation Protection and Measurements (NCRP), American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE), Environmental Protection Agency (EPA), Federal Drug Administration (FDA), Occupational Safety and Health Administration (OSHA), and National Institute for Occupational Safety and Health (NIOSH).</i></p>

	<p><i>Although the purview of the public safety of RF emissions by the FCC was established by the Telecommunications Act of 1996, these standards remain under constant scrutiny. All AT&amp;T cell sites operate well below these standards, and the typical urban cell site operates hundreds or even thousands of times below the FCC’s limits for safe exposure.”</i></p>
<p>Wireless Infrastructure Association (WIA) <a href="#">Wireless Networks and Your Health: THE FACTS</a></p>	<p><b>FDA’s Misrepresentations in WIA Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #8: <a href="#">The FDA “continuously monitors the science.”</a></p> <p><b>WIA Statement</b></p> <p><i>“The U.S. Food and Drug Administration has determined that based on all available evidence, there is “no increased health risk due to radio-frequency (RF) energy.”</i></p> <p><i>U.S. Food and Drug Administration, Consumer Updates: “No Evidence Linking Cell Phone Use to Risk of Brain Tumors”</i></p>
<p>Jerrold Bushberg “Introduction to Potential Health Considerations of 5G Networks” at the Beverly Hills California Health and Safety Commission Meeting on February 24, 2020  (See <a href="#">Agenda</a>, <a href="#">Watch video</a>, See <a href="#">full transcript</a>)</p>	<p><b>FDA’s Misrepresentations in Jerrold Bushberg Statement</b>  #1: <a href="#">The FDA evaluated the “totality” of scientific data</a>  #3: <a href="#">The FDA has evaluated the science on specific non-cancer effects such as oxidative stress, impacts to reproduction and people with electromagnetic sensitivity.</a>  #8: <a href="#">The FDA “continuously monitors the science.”</a></p> <p><a href="#">Minute 1:18:00</a>  <i>“ It is fortunate that this [referring to the FDA] recently came out a week or so ago. It’s the most recent review of all the epidemiological and animal data from the FDA and they ended with their conclusions they had these bullet points which said the FDA doctors scientists and engineers continuously monitor scientific studies and public health data for evidence that radiofrequency from cell phones could cause adverse health effects. To date there is no credible scientific evidence of health problems caused by exposure to radiofrequency energy. ”</i></p>

**The Medical Community is Unaware:** [Webmed](#), [Medical Express](#) and [Healio Hematology/Oncology](#) all feature stories about the FDA’s finding of “insufficient” evidence. Exemplifying these, MD Edge Hematology and Oncology’s [2020 article](#) is entitled, “FDA: Cell phones still look safe.” As an example, the American Cancer Society (ACS) cites the FDA’s

Literature review conclusion of “*insufficient evidence*” on its [“cell phone radiation webpage”](#) despite the fact that it is not a systematic review, not a risk assessment, nor a hazard identification study. In turn, doctors do not routinely assess their patients’ RFR exposure nor educate them on how to reduce exposure.

**The Public Is Left in the Dark:** The public is making choices about how they personally use technology based on these myths. Although they are concerned about the health impacts from widespread and ever-increasing exposure to wireless radiation, they are also easily confused about this highly technical issue. The first thing most people do is look up what government agencies such as the FDA state about safety issues. Most will feel a false sense of security from [FDA’s website pages](#) on “Cell phone safety.” Thus, the public continues to purchase and use more and more wireless devices unaware of the serious health risks posed by years of chronic exposure. The public’s confusion is compounded by the wireless industry’s safety assurances - substantiated by the FDA’s misrepresentations.

We show in this Declaration that the FDA’s misrepresentations and wide-spread dissemination of factual errors are at the very heart of the misinformation causing confusion and false assurances of wireless exposure safety. The continued failure by the FDA to clarify its EMF activities and level of review is leading to serious, catastrophic consequences as well as high financial costs.

### **A Remedy Is Needed As the FDA’s Failure to Act Will Lead To Continued Harm**

**The remedy needed for the FDA is honesty and transparency.**

- The FDA must factually present their level of review regarding the science on radiofrequency.
- The FDA must factually present their level of review regarding their evaluation of the adequacy of FCC limits.
- The FDA should clarify to members of Congress and other agencies the limits of its activities.
- The FDA should offer corrections when the media or Congress or other federal agencies misrepresent their activities.
- The FDA should be testing cell phones and other wireless devices for radiation levels in positions close to the body and publicly posting the results. Devices that exceed RF limits should be taken off the market.
- The FDA must clarify the process by which they “monitor” the research and release all reports and memos and agendas related to their activity on the issue.
- The FDA must allow public comment to their decisions and be transparent in every action they take.
- The FDA must stop misrepresenting the NTP study findings and do a proper quantitative risk analysis on the NTP data and body of research to determine human health risks.

- The FDA must have a robust webpage on how to reduce exposure that includes reducing exposure to the myriad of wireless devices (including Wi-Fi routers, cordless DECT phones, Bluetooth headsets, wireless baby monitors etc.), in our lives today - not just four tips on cell phones.
- Most importantly the FDA should state “we recommend people reduce cell phone and wireless radiation.”

### **American Families, Children and Future Generations are at Risk.**

If the FDA continues to misrepresent their level of review, which in turn allows this issue to remain unattended and under regulated, the public will continue to be at risk not only for increased cancers but for numerous other irreversible health impacts related to exposure. Wireless radiation is ubiquitous, and children are exposed from before they are born. Children, pregnant women, and the medically vulnerable will be most impacted.

### **Federal Inertia: A Continued Lack of Federal Accountability and Inadequate Oversight.**

Cell phone, wireless and cell tower radiation is a public health issue that requires robust evaluation by U.S. federal agencies that protect public health and the environment. However the FDA's lack of a clear policy, paired with its misrepresentations regarding the FDA's level of review, has resulted in the complete failure of the United States to adequately regulate the cumulative and aggregate radiation exposure levels, and ensure the public and environment are protected.

Elected officials at every level of government point to the FCC regulations and the FDA online statements as proof of safety. Most inaccurately believe the FDA and FCC are properly reviewing the research, and are unaware that the EPA was defunded from developing safety limits in 1996. Local and state officials say their “hands are tied” because they are federally preempted by the FCC and its 1996 regulations. Yet at the federal level, the ball has been dropped because federal officials assume the health agencies are doing their job. There has been no robust research review to evaluate the adequacy of FCC limits, and no risk analysis to ensure the public is protected from long term exposures. Thus the health issue is effectively unregulated with no oversight. Although the recent *EHT et al v. FCC* DC Circuit court ruling brought attention to the FCC's improper reliance on the limited information from the FDA, the FCC has no deadline on when the FCC must respond to the Court, and the process could take years.

### **The Economic Impact**

The national costs from FDA's inaction to protect the public must be considered. Studies indicate that those who begin using either cordless or mobile phones regularly before age 20 have greater than a fourfold increased risk of ipsilateral glioma. Given that treatment for a single case of brain cancer can cost between \$100,000 for radiation therapy alone and up to \$1 million depending on drug costs, the financial implications could be staggering, even with a small increase in the population. Resources to address this illness are already in short supply and not universally available in all communities.

However, brain cancer is just one of the numerous health effects research has associated with RFR. Research has repeatedly found oxidative stress from exposure, which over time can contribute to a myriad of health effects. Oxidative stress plays an important role in DNA damage process, general and specific gene expression and cell apoptosis. The brain has a high metabolic rate, making it more prone to damage by ROS and oxidative damage compared to other organs. Research has also found memory damage, behavior problems and neurological damage from radiofrequency radiation exposure which could result in cognitive and behavioral impairment that can affect children's lifelong success. The economic costs could be staggering. Consider the economic impacts of other toxic exposures. [Smoking-related illness](#) in the United States costs more than \$300 billion each year. The estimated U.S. annual healthcare costs from [asbestos-related mesothelioma](#) alone is nearly \$2 billion, while remediation efforts cost an estimated \$3 billion. Health care costs are compounded by loss of productivity and litigation costs. We expect the issue of cell phones, wireless and 5G to follow the path of lead, asbestos and cigarettes. The health and economic costs will be unprecedented.

The bottom line is that FDA's websites and letters promote the **unsubstantiated narrative** that wireless radiation is safe and that FCC limits are protective because the *FDA has a scientific review process in place whereby FDA scientists have thoroughly reviewed all of the latest science and used science based best practice methods to ensure FCC's RFR safety limits are safe for the public, even children.*

Despite the FDA's knowledge of research indicating harmful effects, the FDA has concealed its EMF activities and misled the public, members of Congress and other federal agencies about its role and activities. These false safety assurances influence the public, government officials and medical professionals. As a result, consumers continue to use phones and wireless devices in ways that increase their RFR exposure, and officials do not promote policy that reduces exposure, but instead support policy that increases exposure. 5G streamlining bills have been passed in half the country, fast-tracking the proliferation of thousands of new small cell towers to connect new 5G cell phones and other wireless devices.

### **About Environmental Health Trust**

**Environmental Health Trust (EHT) is a scientific think tank focused on preventable health risks.**

Dr. Devra Davis is co-founder and President of EHT. Davis was Founding Director, Center for Environmental Oncology and the University of Pittsburgh Cancer Institute and founding director of the Board on Environmental Studies and Toxicology of the U.S. National Research Council, National Academy of Sciences. Davis was Senior Advisor to the Assistant Secretary for Health in the Department of Health and Human Services and appointed to the US Chemical Safety and Hazard Investigation Board by President Clinton. She served on the Board of Scientific Counselors of the U.S. National Toxicology Program and various advisory committees to the U.S. Centers for Disease Control and Prevention. She was [part of the team of](#)

[Intergovernmental Panel on Climate Change scientists](#)<sup>64</sup> awarded the Nobel Peace Prize in 2007 with the Honorable Al Gore as Davis was lead author on research assessing climate mitigation policies. Davis has authored more than 200 peer reviewed publications in books and journals on the issue of environmental Health.

EHT was founded by [Dr. Ronald Herberman](#),<sup>65</sup> founder of the University of Pittsburgh Cancer Institutes who issued the first US medical institution employee [recommendations](#)<sup>66</sup> to reduce cell phone radiation in 2008.

Both Dr. Herberman and Dr. Davis provided expert testimony at the last congressional hearings on cell phone radiation held in 2009 (Senate [CSPAN link](#))<sup>67</sup> and 2008 (House [CSPAN link](#))<sup>68</sup> - the last congressional hearings ever held. Following the 2009 hearing, EHT held a [conference in Washington DC](#)<sup>69</sup> attended by the FCC with presentations by NIH and the American Cancer Society and several international scientists.

## **Appendix of Evidence of FDA Misrepresentations, and Influence to Congress, State Agencies and the Media**

This section lists the evidence used in this Declaration including FDA Letters and communications as well as letters by other agencies and officials related to the FDA's misrepresentations.

### **FDA's Public Statements, Letters and Communications**

#### **FDA's Public Website Over the Years**

EHT has monitored the FDA website for years. On February 10, 2020, the FDA updated all its website pages related to cell phone radiation after ten years of no changes. Previous to that the FDA had a long list of Q and As that did underscore the need for more research.

1. The FDA website pages after February 10, 2020 proclaiming cell phone safety and featuring the Literature Review.
  - [Do Cell Phones Pose a Health Hazard?](#)<sup>70</sup>

---

<sup>64</sup> "Devra Davis, a Lead Author on the Intergovernmental Panel on Climate Change Awarded Nobel Peace Prize alongside Honorable Al Gore." 2007, <https://ehtrust.org/devra-davis-part-of-the-intergovernmental-panel-on-climate-change-awarded-nobel-peace-prize-alongside-honorable-al-gore/>.

<sup>65</sup> "Ronald B. Herberman, UPCI Founding Director, Dies," Pitt Chronicle | University of Pittsburgh, June 17, 2013. <https://www.chronicle.pitt.edu/story/ronald-b-herberman-upci-founding-director-dies>.

<sup>66</sup> Tara Parker-Pope, "Prominent Doctor Warns about Cell Phones," New York Times (blog) JULY 20, 2008. <https://well.blogs.nytimes.com/2008/07/24/prominent-cancer-doctor-warns-about-cellphones/>

<sup>67</sup> "Health Effects of Cell Phone Use, Senate Appropriation Subcommittee." C-Span video, 1:45. 2009. <https://www.c-span.org/video/?288879-1/health-effects-cell-phone-use>.

<sup>68</sup> "Health Effects of Cell Phone Use, House Oversight Subcommittee on Domestic Policy." C-Span video, 2:03:33:24. 2008. <https://www.c-span.org/video/?288879-1/health-effects-cell-phone-use>

<sup>69</sup> "EHT Expert Conference in Washington DC." September 13-15 2009. <https://ehtrust.org/science/key-scientific-lectures/2009-expert-conference-on-cell-phone-radiation/>.

<sup>70</sup> "Do Cell Phones Pose a Health Hazard?" (2020) <https://www.fda.gov/radiation-emitting-products/cell-phones/do-cell-phones-pose-health-hazard>.

- [Children and Teens and Cell Phones](#)<sup>71</sup>
  - [Scientific Evidence for Cell Phone Safety](#)<sup>72</sup>
  - [Radio Frequency Radiation and Cell Phones](#)<sup>73</sup>
  - [Reducing Radio Frequency Exposure from Cell Phone Radiation](#)<sup>74</sup>
2. FDA Webpages 2009 to 2019 (Previous to February 10, 2020 Saved on Wayback Machine)
- [Do Cell Phones Pose a Health hazard?](#)<sup>75</sup>
  - [Children and Cell Phones](#)<sup>76</sup>
  - [Current Research Results](#)<sup>77</sup>
  - [Radiofrequency Background](#)<sup>78</sup>
  - [Reducing Exposure: Hands-free Kits and Other Accessories](#)<sup>79</sup>
3. Pre 2009 FDA website pages - a few examples saved on waybackmachine.
- [2004 Cell Phones Questions & Answers](#)
  - [Cell Phones and Cancer: No Clear Connection March 9, 2001, February 28, 2002](#)

---

<sup>71</sup> “Children and Teens and Cell Phones.” U.S. Food and Drug Administration (2020)

<https://www.fda.gov/radiation-emitting-products/cell-phones/children-and-teens-and-cell-phones>

<sup>72</sup> “Scientific Evidence for Cell Phone Safety.” U.S. Food and Drug Administration. (2020)

<https://www.fda.gov/radiation-emitting-products/cell-phones/scientific-evidence-cell-phone-safety>.

<sup>73</sup> “Radio Frequency Radiation and Cell Phones.” U.S. Food and Drug Administration. (2020)

<https://www.fda.gov/radiation-emitting-products/cell-phones/radio-frequency-radiation-and-cell-phones>.

<sup>74</sup> “Reducing Radio Frequency Exposure from Cell Phones.” U.S. Food and Drug Administration. (2020)

<https://www.fda.gov/radiation-emitting-products/cell-phones/reducing-radio-frequency-exposure-cell-phones>

<sup>75</sup> Electromagnetic Biology and medicine,

<https://www.tandfonline.com/doi/figure/10.1080/15368378.2016.1220389>; 07 Feb. 2019; archived at Wayback

Machine, <https://web.archive.org/web/20190207225334/https://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/HomeBusinessandEntertainment/CellPhones/ucm116282.htm>.

<sup>76</sup> Center for Devices and Radiological Health. “Children and Teens and Cell Phones.” U.S. Food and Drug Administration. FDA: 16 Dec 2019; archived at Wayback Machine,

<https://web.archive.org/web/20191216191346/https://www.fda.gov/radiation-emitting-products/cell-phones/children-and-cell-phones>.

<sup>77</sup> Current Research Results. U.S. Food and Drug Administration. FDA 16 Dec 2019; archived at Wayback Machine, <https://web.archive.org/web/20191216191422/>

<sup>78</sup> Center for Devices and Radiological Health. “Radio Frequency Radiation and Cell Phones.” U.S. Food and Drug Administration. <https://www.fda.gov/radiation-emitting-products/cell-phones/radio-frequency-radiation-and-cell-phones>; 16 Dec 2019; archived at Wayback Machine,

<https://web.archive.org/web/20191216191507/https://www.fda.gov/radiation-emitting-products/cell-phones/radiofrequency-background>.

<sup>79</sup> Center for Devices and Radiological Health. “Reducing Radio Frequency Exposure from Cell Phones.” U.S. Food and Drug Administration. FDA. <https://www.fda.gov/radiation-emitting-products/cell-phones/reducing-radio-frequency-exposure-cell-phones>; 16 Dec 2019; archived at Wayback Machine,

<https://web.archive.org/web/20191216191229/https://www.fda.gov/radiation-emitting-products/cell-phones/reducing-exposure-hands-free-kits-and-other-accessories>.

## Official FDA Statements and Reports Posted Online

1. The FDA Literature Review “[Review of Published Literature between 2008 and 2018 of Relevance to Radiofrequency Radiation and Cancer](#), February 2020
2. [FDA Jeffrey Shuren Submission to the FCC Docket 13-84](#) stating that scientific evidence to date does not support adverse health effects, April 24, 2019
3. FDA Press [Release, Statement from Jeffrey Shuren, M.D., J.D., Director of the FDA’s Center for Devices and Radiological Health on the National Toxicology Program’s report on radiofrequency energy exposure](#), November 1, 2018
4. FDA Press Release, [Statement from Jeffrey Shuren, M.D., J.D., director of the FDA’s Center for Devices and Radiological Health on the recent National Toxicology Program draft report on radiofrequency energy exposure](#), February 2, 2018

## FDA Letters and Email Communication Chains

FDA to Scientists

1. [One sentence letter by FDA’s Dr. Shuren to Theodora Scarato](#)<sup>80</sup> March 24, 2020  
February 27, 2020 Letters Sent to the FDA by Scientists Calling For a Retraction of the Literature Review. [Main EHT page detailing the Scientists’ Letters to the FDA](#)
  - [Letter calling for a retraction signed by numerous scientists.](#)
  - [Ronald Melnick PhD’s letter to the FDA on the National Toxicology Program study](#)
  - [Albert Manville PhD, retired Senior Wildlife Biologist, Division of Migratory Bird Management, U.S. Fish & Wildlife Service, Senior Lecturer, Johns Hopkins University](#)
  - [Prof. Tom Butler of the University College in Cork, Ireland’s letter to the FDA](#)
  - [Igor Belyaev, PhD, Dr. Sc. Head, Department of Radiobiology of the Cancer Research Institute, Biomedical Research Center of the Slovak Academy of Science](#)
  - [Paul Heroux PhD, McGill University](#)
  - [Alfonso Balmori, BSc](#)
  - [PDF of all letters and statements](#)
2. [FDA Letter to Physicians for Safe Technology Dr. Cindy Russell and Dr. Beatrice Golomb](#) stating that the NTP study supports the FDA determination that current safety limits for RFR are adequate and also in regards to electromagnetic sensitivity, the FDA does not believe electromagnetic fields are the cause of symptoms, May 23, 2019
3. [FDA Letter to Dr. Ron Melnick](#) in response to Dr. Melnick and other scientists asking for corrections regarding the NTP final reports. March 14, 2019

---

<sup>80</sup> “One sentence response letter by FDA to Theodora Scarato” (March 24, 2020). <https://ehtrust.org/wp-content/uploads/FDA-communications-Scarato-PDF-2019.pdf>.

Theodora Scarato to FDA's David Kassiday:

Years of Email Communications Between Theodora Scarato and FDA's David Kassiday before and after September 23, 2014 meeting between EHTs Theodora Scarato and Devra Davis and FDA staff Emails before meeting between Theodora Scarato to FDA's David Kassiday.

1. [September 15, 2014 on FDA's activities](#) (general statements about FDA monitoring research, interagency workgroup. When asked "What information you already have reviewed?" the answer was "FDA has reviewed many papers, presentations, and reports." The FDA states they reviewed the CERENAT study but it was never posted anywhere online
2. [Scarato to Kassiday on Wi-Fi devices at body contact November 1, 2014](#)
3. [2/5/2016 email chain](#) FDA did not do a formal review in 2013 and no answer to question about review of FCC limits as protective
4. [Email from FDA's David Kassiday to Scarato](#), October 18, 2017,
5. A series of email communications ([2014 to 2016 Emails](#), [2017 Emails](#))<sup>81</sup> over several years between FDA's Daniel Kassiday and EHT Executive Director Theodora Scarato after an in-person meeting at the FDA between Dr. Devra Davis and Theodora Scarato and FDA's Daniel Kassiday and Michael D. O'Hara.
6. [FDA Communications Between Theodora Scarato and FDA Branch Chief, Postmarket and Consumer Branch Division of Industry and Consumer Education Tonya Wilbon on February 19, 2020 and FDA Consumer Safety Officer, Division of Industry and Consumer Education Counsel Terri Garvin on February 12, 2020.](#)

### **Letters To and From Members of Congress**

2019 FDA/Scientists/U.S. Representative Anna Eshoo and Senator Jeff Merkley:

1. [FDA Jeffrey Shuren and Edward Margerrison Letter to Representative Anna Eshoo and Senator Jeff Merkley](#) summarizing how they determined FCC limits were adequate and 5G health effects were not a concern, September 9, 2019

Scientists Respond to the FDA's September 9, 2019 Letter to Representative Eshoo:

- [Dr. Devra Davis/ Environmental Health Trust to Eshoo Letter](#): October 19, 2019 Scientific letter with extensive citations documenting the published scientific evidence with counters statements by the FDA that RF is safe/brain tumors are rising in youth in the USA, Cancer is not only health endpoint showing effects, calls for Congressional hearing.
- [Bioinitiative Letter](#) to FDA Shuren, September 26, 2019 urging the FDA to rescind the endorsement of the adequacy of RF limits/ no independent review of research/ grossly outdated and incomplete information on FDA website.

---

<sup>81</sup> "A series of email communications over several years between FDA's Daniel Kassiday and EHT Executive Director Theodora Scarato." (2014 - 2017) [https://ehtrust.org/wp-content/uploads/Melnick-Letter-RE\\_FDA-review-of-RFR-2020.pdf](https://ehtrust.org/wp-content/uploads/Melnick-Letter-RE_FDA-review-of-RFR-2020.pdf).

- [California Brain Tumor Association Letter to School](#) September 30, 2019
- [Physicians For Safe Technology Letter to Eshoo](#) October 1, 2019 documenting a “number of inconsistencies, misstatements and flaws in the research summaries” put forward by the FDA. FCC to Congress Communications That Reference to the FDA
- [FCC Commissioner Carr Tweet About FDA](#) May 22, 2020

U.S. Senator Richard Blumenthal and U.S. Representative Anna G. Eshoo:

- [U.S. Senator Richard Blumenthal and U.S. Representative Anna G. Eshoo Letter to FCC Commissioner Brendan Carr About 5G Health Hazards](#), December 9, 2018
- [FCC Commissioner Carr letter to U.S. Senator Richard Blumenthal and U.S. Representative Anna G. Eshoo](#), December 17, 2018

U. S. Representative Andy Kim:

- [U.S. Representative Andy Kim Letter to FCC Chair Ajit Pail About Health Effects of 5G](#) March 28, 2019
- [FCC Letter Responding to Representative Kim](#), April 30, 2019

U.S. Representative Thomas Suozzi:

- [U.S. Representative Thomas Suozzi Letter to FCC](#), April 16, 2019
- [FCC Letter Responding to Representative Suozzi](#), April 30, 2019

U. S. Representative Peter A. DeFazio:

- [Representative Peter A. DeFazio Letter to the FCC and FDA](#), April 15, 2019
- [FCC Letter Responding to Representative DeFazio](#), April 30, 2019

Citizens Petition:

- [FDA Denial of Petition Docket FDA 2013-P-1374 to Frederick S. Mayer](#), July 17, 2017
- [Petition by Frederick S. Mayer to the FDA](#)
- [Supplemental Material in Mayer Petition to the FDA](#)

FCC Julius Knapp Letters to Questions Re 5G, Smart meters and Health:

- [FCC to Senator Tammy Baldwin](#), November 4, 2019
- [FCC Chair Letter to U. S. Senator Tim Scott re: Smart meters](#), May 5, 2017
- [FCC Julius Knapp Letter to Senator Nelson](#) April 4, 15, 2017

- [FCC Chair Julius Knapp letter to U.S. Representative Lynn Woolsey on Smart Meters](#), April 21, 2011
- [FCC Chair Knapp Letter to Cindy Sage](#), August 6, 2010

National Cancer Institute Communications:

- [Middle School Student to the National Cancer Institute](#), June 18, 2016
- [National Cancer Institute to Middle School Student](#), December 14, 2016

### **Congress and FDA Communications**

U.S. Representative Anna Eshoo and Senator Jeff Merkley:

- [U.S. Representative Anna Eshoo and Senator Jeff Merkley's letter to the FDA on 5G](#) July 18, 2019
- [FDA Jeffrey Shuren Response to U. S. Representative Eshoo](#)- Same was sent to Merkley- September 9, 2019
- [U.S. Representative Eshoo Letter to Constituent](#), September 20, 2019

2020 Letters between FDA and Senator Tammy Baldwin Refuse to Answer Direct Questions:

- [FDA Letter to U.S. Senator Tammy Baldwin](#) states the FDA performed an “extensive risk analysis” and determined insufficient evidence to demonstrate a causal link between cell phones and cancer...” September 8, 2020

Congress Communications of Safety to Constituents After They Raise Health Issues:

- [U S. Representative Scott Fitzgerald to Resident](#) November 5, 2021
- [U.S. Representative Alan Lowenthal to a Constituent on 5G](#), October 18, 2021
- [U.S. Senator Kyrsten Sinema Letter to Constituent](#) October 7, 2021
- [U.S. Representative Trone letter to Scarato on 5G](#) October 27, 2021
- [U.S. Representative Chrissy Houlahan letter to Constituent](#), October 8, 2021
- [U.S. Representative Trone Letter on 5G Towers](#) September 20, 2021
- [U.S. Representative Brad Wenstrup Letter to Constituent](#), September 16 2021
- [U.S. Senator Feinstein Letter to Constituent](#), September 6, 2021
- [U.S. Senator Sherrod Brown Letter to Constituent](#), September, 26, 2019
- [U.S. Senator Markey Letter to Constituent on 5G](#) September 18, 2018
- [U. S. Senator Tammy Baldwin Letter to Constituent](#), September 13, 2017
- [U. S. Senator Markey Letter to Constituent After Health Issues Raised](#), July 26, 2017

## State

### New Hampshire Commission:

- [FDA's Karen Meister Letter to Denise Ricciardi of the New Hampshire Commission on 5G found on the Commission's Final 5G Report page 41.](#)<sup>82</sup> Emails dated June 23, 2020, July 15, 2020, July 15, 2020, March 2, 2020

### State Entities and Officials:

- [Connecticut State Senator Kevin Witkos Letter to Constituent](#), September 7, 2021
- [New York State Senator James F. Gaughran Letter to the FCC](#), July 23, 2019
- [Maryland Department of Public Health Letter](#), April 23, 2014
- [Florida Department of Environmental Protection to Florida Resident](#), January 22, 2013
- [Florida Department of Environmental Protection Letter](#), January 22, 2013
- [State Senator Fitzgerald Office tells Constituent it is a Federal Issue](#), December 13, 2011
- [Wisconsin Department of Natural Resources](#), December 12, 2014

### Local Officials, Government Agencies and Entities

- [County Commissioner Palm Beach County Florida](#), September 20, 2021
- [Montgomery County MD Councilman Hans Riemer newsletter](#) July 28, 2021
- [Montgomery County MD Councilman Hans Riemer Tweet](#) July 14, 2021
- [Colin Groff Assistant City Manager Boynton Beach Letter to Resident](#), November, 3, 2020 and November 2, 2020
- [Robert Bessel Selectman Town of Canton, Connecticut Letter](#), March 18, 2020
- [Questions and Responses from Verizon Representatives Hempfields School District Board Meeting](#), November 14, 2017
- [Chad Pelishek Director of Planning & Development City of Sheboygan](#) October 21 2021
- [University of Maryland Letter citing FCC and ICNIRP limits](#), January 15, 2015
- [Montgomery County School District Letter on FCC and FDA Safety Assurances](#), [March 12, 2014](#)
- Town of Tucson Arizona [-FAQs on Small Cells References FDA](#)
- Glendale California: [9/22/21 Verizon testimony](#)

---

<sup>82</sup> "New Hampshire State Report on Health and Environmental Effects of 5G and Wireless Radiation." November 07, 2020. <https://ehtrust.org/new-hampshire-state-report-on-health-and-environmental-effects-of-5g-and-wireless-radiation/>.

- **City of Sacramento** [5G FAQs: WHO DETERMINES SAFETY STANDARDS FOR 5G?](#)

The Public Service Commission of Wisconsin, Smart meters and several U.S. residents:  
An example of how the FDAs lack of clear policy impacts the American people:

- [Public Service Commission of Wisconsin Letter to Resident](#), May 28, 2003
- [Public Service Commission of Wisconsin to resident](#) April 27, 2010
- [Public Service Commission of Wisconsin Letter to Resident](#), February 10, 2011
- [Public Service Commission of Wisconsin Investigation into the Health and Safety and Other Aspects of Advanced 5-WI-101 Meter Infrastructure Systems for Water Utilities](#), September 12, 2012
- [Wisconsin Public Service Commission Denies Rehearing](#) November 8, 2013

### **Wireless Industry Safety Assurances That Refer to the FDA**

Wireless Company Online Websites:

- CTIA Consumer Website [Wireless Health Facts- Wirelesshealthfacts.com](#)
- Verizon's "Facts About RF Energy" [brochure](#)
- Verizon's [Consumer Information Webpage](#)
- Samsung's [Health and Safety Information](#)
- T Mobile's [RF Safety Webpage](#)
- AT&T's [Information on Wireless and Health Webpage](#)
- Crown Castle [Understanding the Safety of 5G](#)
- Wireless Infrastructure Association [Wireless Networks and Your Health: THE FACTS](#)
- Times of San Diego features [CTIA Protecting Health and Safety](#)
- GSMA [Handbook](#) on [5G, EMF Exposure and Safety](#)

EMF Explained - Australian Mobile Telecommunications Association - website: [US National Toxicology Program Study Results Published - features Statement by FDA Shuren](#)

The full longer 150 page plus Report by Environmental Health Trust on [FDA's Misrepresentations of FDA's Level of Review for Cell Phone and Wireless Radiation Safety](#) is found online at <https://ehtrust.org/fdas-misrepresentations-of-cell-phone-radiation-safety-ehtrust-report/>



## **B. Americans for Responsible Technology**

My name is Douglas Wood, and I am the founder and National Director of Americans for Responsible Technology (ART), a not-for-profit coalition of more than 130 grassroots organizations across the country advocating for the deployment of safe, economical and future-proof wired technology and promoting equitable access to technologies that benefit society and protect the health, safety, security, privacy and property of all Americans.

I am petitioning the Department of Health and Human Services and its constituent agency, the Food and Drug Administration (FDA), to (1) immediately issue science-based human health safety standards for exposure to radiofrequency (RF) radiation from wireless devices and infrastructure, or (2) immediately convene an emergency expert panel to develop such standards pursuant to 21 USC 360 kk following procedures required by the Administrative Procedures Act, or (3) immediately issue a public statement that the Agency currently has no official standards for human exposure to RF radiation from wireless devices and infrastructure, and is therefore unable to render accurate, science-based advice to other federal agencies.

This is an urgent matter due to the rapidly growing demand for wireless devices and services, pushed by a misguided national effort to make our cars, homes, cities, electric grids and utilities “smart,” and the rapacious appetite for profits on the part of the world’s telecommunications companies. This rush to connect everything to everyone and fill the world with the Internet of Things is happening in a vacuum of scientific information resulting from the failure of the FDA to fulfill its primary responsibility to protect the health of the American people.

Over the past three years, our organization has been engaged in a near-constant effort to fill the information gap and educate the public about the rapidly developing science regarding human exposure to RF radiation, including biological effects documented at levels below the current thermal limits promulgated by the Federal Communications Commission (FCC). To illuminate the research taking place worldwide by highly credible individuals and institutions, we compiled a digest of “The Independent Science on the Effects of Wireless Radiation on Human Health and the Environment,” attached hereto, which we update on a quarterly basis. This effort, along with the development of other educational materials has cost us hundreds of thousands of dollars in staff time and materials, and has been necessary because of the failure of the FDA to clearly articulate a science-based position on the subject. Instead, the Agency seems determined to straddle the fence, on the one hand claiming it has seen no evidence of harm from exposure and on the other, casually offering advice on how consumers can reduce exposure “if they want.”

What public health agency, cognizant of the robust and growing body of scientific evidence of human harm from exposure to a toxin, advises consumers to take precautions “if they want?” The failure of the FDA to conduct a serious investigation of the health impacts of RF radiation, to develop science-based standards and to provide the American public with actionable information is an unjustified dereliction of responsibility. This is causing confusion in the marketplace, uncertainty for local governments, anger in those who are physically suffering

from exposure, desperation for parents who are trying to protect their children, and frustration for school officials caught between a respect for science, a legal responsibility to protect students and a national policy which is advocating the adoption of technologies that could be harmful – and perhaps even life-threatening – to children under their care.

- Local government officials are confused and conflicted because the FDA nominated a study that was conducted by the National Toxicology Program which found that exposure to RF radiation causes cancer, DNA damage and heart damage,<sup>1</sup> while telecoms claim their wireless devices and infrastructure meet all FCC safety guidelines.<sup>2</sup> These local officials are further constrained from exercising their primary legal responsibility to protect the health and safety of citizens by federal law which prevents objections to wireless infrastructure based on “environmental” concerns. This creates an untenable situation, caused in large part by the failure of the FDA to fulfill its responsibility under the law to protect public health.
- In community after community, outraged citizens are demanding reasonable accommodations to prevent 24/7 involuntary RF radiation exposure for their families from nearby 4G/5G small cell antennas, OTARD antennas on neighbor’s roofs or large cell phone towers. But local officials cannot accommodate the requests because purveyors claim their equipment “meets FCC human exposure guidelines” and imply that these guidelines have been vetted and approved by the FDA.
- School officials are confused because the growing body of peer-reviewed science demonstrates that non-thermal levels of RF radiation can inflict serious damage on the developing brains of children, while at the same time government funding for “upgrading” schools with wireless technology flows from Washington. Concerned parents are met with heavy skepticism from school officials, since once again, purveyors of wireless technology in schools claim all of their equipment meets FCC guidelines which should extinguish any concerns. But parents are not that stupid. The instinct to protect is stronger than the flimsy and transparent assurances of the FCC and manufacturers that everything is fine.
- We have lost count of the number of people who have developed a sometimes debilitating illness known as Electromagnetic HyperSensitivity (EHS) or microwave sickness after a digital RF-radiating “smart” utility meter was installed in or on their home or apartment. These devices, which emit high-level bursts of radiation, have been approved by the FCC because the agency allows manufacturers to average emissions over a period of time. The bursts, which would normally far exceed FCC limits if sustained, fail to sufficiently raise the temperature of the body during their short duration, and therefore are permitted. The FCC is making *de facto* medical decisions for

<sup>1</sup> <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>

<sup>2</sup> [https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/\\$file/20-1025-1910111.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/FB976465BF00F8BD85258730004EFDF7/$file/20-1025-1910111.pdf)

millions of Americans. The FDA on the other hand, with the ability and responsibility to provide the public with fact-based science on the human response to high bursts of RF radiation, has instead ignored the issue. This situation is devastating to the rapidly increasing number of people, including school children, who suffer from EHS, because the uninformed and untrained medical establishment is unable to recognize or manage EHS. Patients suffering with this illness are often diagnosed with a mental disorder. Medical professionals, like most of the public, believe that FCC compliance is an assurance of safety, confirmed and endorsed by the FDA. Instead of informing the public that it has not actually conducted any scientific inquiry into the issue, the FDA instead allows this misperception to persist.

- People suffering from EHS report symptoms including severe headaches, nausea, dizziness, inability to concentrate, tinnitus, insomnia, and a general malaise. Symptoms subside when exposure to RF radiation is reduced or eliminated. This has caused many who suffer EHS to abandon their homes, quit their jobs, leave their families and seek shelter in sparsely populated areas, or invest in EMF shielding products and building materials in their own homes as a means of temporary escape. The problem is worldwide. Scientists in France and elsewhere have documented this neurologic pathological disorder, and have invited others to join in the research, but lack of funding has discouraged widespread investigation.

In virtually all of these circumstances, ART has been called in to inform, testify, present or otherwise intervene in local government proceedings, school board hearings, state legislature committee meetings, meetings of housing coops, local grassroots groups, parent associations and other similar forums. We have led small coalitions to oppose local and state legislation that fast-tracks the deployment of 5G, and joined with others to oppose the mandatory installation of smart meters because of the involuntary exposure which these technologies entail.

We have created print documents to inform local governments of their rights under the 1996 Telecommunications Act, and created documents that help local citizens improve and strengthen their local zoning codes. We have compiled codes from around the country and made them available to local legislators. Together with legal, technical and medical experts, we have held webinars on various aspects of wireless technology and how its deployment intersects with existing law and medical understanding. All of these events have been made necessary, in part, by the lack of active participation by the FDA in the overarching question of the health impacts of exposure to RF radiation.

We have made documentary films about the issue, including one specifically about OTARD antennas, and their potential to impact the health and safety of unsuspecting consumers who agree to have high-powered 5G antennas placed on their homes. All they know about 5G is that it's fast, and it's deemed safe because it meets FCC safety guidelines. They have no idea the FCC's claim that it relies on the FDA for guidance has no basis in fact.

In the absence of FDA involvement on this issue, ART has been forced to write legislation to have state legislatures convene their own committees to investigate the health impacts of exposure. Several states have convened committees (with mixed results due to heavy industry influence), but regardless of their findings, the FCC claims its human exposure guidelines trump any local law. Judges have generally agreed, giving deference to federal authorities which they believe are engaged in good faith efforts to monitor and actively evaluate developing science. There is no truth behind this.

In short, we believe that HHS and the FDA are engaged in fostering a cruel deceit on the American people by pretending to be actively monitoring the issue of RF radiation exposure on humans when they are not. Instead, they are actively and knowingly promoting the myth that the FDA is carefully reviewing the science and has developed standards by which products and services are measured. Moreover, they are allowing others to perpetuate and extend this myth, resulting in great harm and imminent hazard to the American people.

This cannot stand. This is, for many Americans, an immediate existential issue, and for millions of others, a potential serious health crisis in the making. Science tells us there are likely to be severe consequences from prolonged exposure to RF radiation. Exposure at a critical period of development could easily manifest in a diagnosis of cancer, DNA damage or reproductive or neurological problems later in life.

As I write this declaration, there are decisions being made that, in ten or twenty years, could mean a cancer diagnosis for a young student. Those decisions could also mean unexplained infertility for a young couple, or a diagnosis of neurological impairment for a newborn. Those decisions could literally mean death due to RF interference with a life-saving implanted medical device, or result in suicide for someone suffering from EHS who can no longer bear the pain.

The FDA is responsible for protecting the public's health and most Americans assume the agency is doing everything in its power to accomplish that. Sadly, this is not the case when it comes to RF radiation. Wireless infrastructure and devices have infiltrated every aspect of American life and despite thousands of peer-reviewed studies and numerous and urgent appeals from scientific and medical researchers and doctors, the FDA has been conspicuously absent in dealing with one of the most consequential public health threats of our time.

Under penalty of perjury I attest that the foregoing is true and correct to the best of my knowledge and understanding.

A handwritten signature in black ink, appearing to read 'D. A. Wood', with a long horizontal flourish extending to the right.

Douglas A. Wood

## **INDEX**

# Independent Science on the Effects of Wireless Radiation on Human Health and the Environment

(compiled by Grassroots Environmental Education)

Updated December 2021

- I. Effects on Fetuses
- II. Effects on Children and Adolescents
- III. Brain Tumors
- IV. Parotid Gland Tumors
- V. Other Malignancies
- VI. DNA Damage and Gene Expression Changes
- VII. Neurological/Cognitive Effects
- VIII. Cardiovascular Effects
- IX. Male Fertility
- X. Electromagnetic Sensitivity
- XI. Implanted Medical Devices
- XII. 5G Effects
- XIII. Wildlife and Plants
- XIV. Reports and Articles

## **I. EFFECTS ON FETUSES**

1. **Mobile Phone Use During Pregnancy: Which Association With Fetal Growth?**  
Boileau, N., et al. *Journal of Gynecology Obstetrics and Human Reproduction*  
49(8):101852. (2020). <https://pubmed.ncbi.nlm.nih.gov/32623065/>
2. **Mother's Exposure to Electromagnetic Fields Before and During Pregnancy is Associated with Risk of Speech Problems in Offspring.** Zarei, S., et al. *Journal of*

- Biomedical Physics and Engineering* 9(1):61-68. (2019).  
<https://www.ncbi.nlm.nih.gov/pubmed/30881935>
3. **Prenatal Exposure to Extremely Low Frequency Magnetic Field and Its Impact on Fetal Growth.** Ren, Y., et al. *Environmental Health* 18(1):6. (2019).  
<https://www.ncbi.nlm.nih.gov/pubmed/30635061>
  4. **Associations of Maternal Cell Phone Use During Pregnancy, Pregnancy Duration And Fetal Growth In Four Birth Cohorts.** Tsarna, E., et al. *American Journal of Epidemiology* 188(7):1270-1280. (2019).  
<https://www.ncbi.nlm.nih.gov/pubmed/30995291>
  5. **Effect of radiofrequency radiation on reproductive health.** Singh, R., et al. *Indian Journal of Medical Research* 148(Suppl 1): S92–S99. (2018).  
<https://doi.org/10.1038/s41598-017-16623-8>
  6. **The Effects of Radiofrequency Radiation on Mice Fetus Weight, Length and Tissues.** Alimohammadi, I., et al. *Data in Brief* 19:2189-2194. (2018).  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6141437/pdf/main.pdf>
  7. **Effects of Prenatal Exposure to Wi-Fi Signal (2.45 GHz) on Postnatal Development and Behavior in Rat: Influence of Maternal Restraint.** Othman, H., et al. *Behavioral Brain Research* 326:291-301. (2017). <https://www.ncbi.nlm.nih.gov/pubmed/28288806>
  8. **Exposure to Magnetic Field Non-Ionizing Radiation and the Risk of Miscarriage: A prospective Cohort Study.** Li, D., et al. *Scientific Reports* 7(17541). (2017).  
<https://www.nature.com/articles/s41598-017-16623-8>
  9. **Postnatal Development and Behavior Effects of In-Utero Exposure of Rats to Radiofrequency Waves Emitted From Conventional Wi-Fi Devices.** Othman, H., et al. *Environmental Toxicology and Pharmacology* 52:239-247 (2017).  
<https://www.ncbi.nlm.nih.gov/pubmed/28458069>
  10. **Lasting Hepatotoxic Effects of Prenatal Mobile Phone Exposure.** Yilmaz, A., et al. *The Journal of Maternal-Fetal & Neonatal Medicine* 30(11):1355-1359 (2017).  
<https://www.ncbi.nlm.nih.gov/pubmed/27427155>
  11. **Multiple Assessment Methods of Prenatal Exposure to Radio Frequency Radiation from Telecommunication in the Mothers and Children’s Environmental Health (MOCEH) Study.** Choi, KH., et al. *International Journal of Occupational Medicine and Environmental Health* 29(6):959-972 (2016).  
<https://www.ncbi.nlm.nih.gov/pubmed/27869246?dopt=Abstract>
  12. **A Review on Electromagnetic Fields (EMFs) and the Reproductive System.** Asghari, A., et al. *Electronic Physician Journal* 8(7):2655-2662. (2016).  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5014506/>

13. **Genotoxicity Induced by Foetal and Infant Exposure to Magnetic Fields and Modulation of Ionising Radiation Effects.** Udrouiu, I., et al. *PLoS One*10(11):E0142259. (2015). <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0142259>
14. **Oxidative Stress of Brain and Liver is Increased by Wi-Fi (2.45 GHz) Exposure of Rats During Pregnancy and the Development of Newborns.** Çelik, Ö., et al. *Journal of Chemical Neuroanatomy* 75(Pt B):134-139. (2015).  
<https://www.ncbi.nlm.nih.gov/pubmed/26520617>
- 15.
16. **Neurodegenerative Changes and Apoptosis Induced by Intrauterine and Extrauterine Exposure of Radiofrequency Radiation.** Güler, G., et al. *Journal of Chemical Neuroanatomy* 75(Pt B):128-133. (2015).  
<https://www.ncbi.nlm.nih.gov/pubmed/26520616>
17. **Maternal Exposure to a Continuous 900-MHz Electromagnetic Field Provokes Neuronal Loss and Pathological Changes in Cerebellum of 32-Day-Old Female Rat Offspring.** Odacı, E., et al. *Journal of Chemical Neuroanatomy* 75(Pt B):105-110. (2015). <https://www.ncbi.nlm.nih.gov/pubmed/26391347>
18. **Different Periods of Intrauterine Exposure to Electromagnetic Field: Influence on Female Rats' Fertility, Prenatal and Postnatal Development.** Alchalabi, A., et al. *Asian Pacific Journal of Reproduction* 5(1):14-23. (2015).  
<https://www.sciencedirect.com/science/article/pii/S2305050015000536>
19. **Use of Mobile Phone During Pregnancy and the Risk of Spontaneous Abortion.** Mahmoudabadi, F., et al. *Journal of Environmental Health Science and Engineering* 13:34. (2015). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4416385/>
20. **Effects of Prenatal 900 MHz Electromagnetic Field Exposures on the Histology of Rat Kidney.** Ulubay, M., et al. *International Journal of Radiation Biology* 91(1):35-41. (2015). <https://www.ncbi.nlm.nih.gov/pubmed/25084839>
21. **The Effect of Exposure of Rats During Prenatal Period to Radiation Spreading from Mobile Phones on Renal Development.** Bedir, R., et al. *Renal Failure* 37(2):305-9. (2015). <https://www.ncbi.nlm.nih.gov/pubmed/25691088?dopt=Abstract>
22. **Dosimetric Study of Fetal Exposure to Uniform Magnetic Fields at 50 Hz.** Liorni, I., et al. *Bioelectromagnetics* 35(8):580-97 (2014).  
<https://www.ncbi.nlm.nih.gov/pubmed/25266786>
23. **Influence of Pregnancy Stage and Fetus Position on the Whole-Body and Local Exposure of the Fetus to RF-EMF.** Varsier, N. et al. *Physics in Medicine and Biology* 59(17):4913-26. (2014).  
<https://www.ncbi.nlm.nih.gov/pubmed/25098501?dopt=Abstract>

24. **Autism-Relevant Social Abnormalities in Mice Exposed Perinatally to Extremely Low Frequency Electromagnetic Fields.** Alsaeed, I., et al. *International Journal of Developmental Neuroscience* 37:58-64. (2014).  
<https://www.ncbi.nlm.nih.gov/pubmed/24970316?dopt=Abstract>
25. **Pyramidal Cell Loss in the Cornu Ammonis of 32-day-old Female Rats Following Exposure to a 900 Megahertz Electromagnetic Field During Prenatal Days 13–21.** Bas, O., et al. *NeuroQuantology* 11(4):591-599. (2013).  
<https://neuroquantology.com/index.php/journal/article/viewFile/701/625>
26. **The Effects of 900 Megahertz Electromagnetic Field Applied in the Prenatal Period on Spinal Cord Morphology and Motor Behavior in Female Rat Pups.** Odaci, E., et al. *NeuroQuantology* 11(4):573-581. (2013).  
<https://neuroquantology.com/article.php?id=2259>
27. **The Effects of Prenatal Exposure to a 900 Megahertz Electromagnetic Field on Hippocampus Morphology and Learning Behavior in Rat Pups.** İkinici, A., et al. *NeuroQuantology* 11(4):582-590. (2013).  
<https://neuroquantology.com/article.php?id=2262>
28. **Fetal Radiofrequency Radiation Exposure From 800-1900 MHz-Rated Cellular Telephones Affects Neurodevelopment and Behavior in Mice.** Aldad, T., et al. *Science Reports* 2:312. (2012). <https://www.nature.com/articles/srep00312>
29. **Cranial and Postcranial Skeletal Variations Induced in Mouse Embryos by Mobile Phone Radiation.** Fragopoulou, AF., et al. *Pathophysiology* 17(3):169-77. (2010).  
<https://www.ncbi.nlm.nih.gov/pubmed/19854628>
- 30.
31. **Maternal Occupational Exposure to Extremely Low Frequency Magnetic Fields and the Risk of Brain Cancer in the Offspring.** Li, P, et al. *Cancer Causes & Control* 20(6):945-55. (2009). <https://www.ncbi.nlm.nih.gov/pubmed/19224378>
32. **Reproductive and Developmental Effects of EMF in Vertebrate Animal Models.** Pourlis, A.F. *Pathophysiology* 16(2-3):179-89. (2009).  
<https://www.ncbi.nlm.nih.gov/pubmed/19272761>
33. **Prenatal and Postnatal Exposure to Cell Phone Use and Behavioral Problems in Children.** Divan, HA., et al. *Epidemiology* 19(4):523-29 (2008).  
<https://www.ncbi.nlm.nih.gov/pubmed/18467962>
34. **Effects of Prenatal Exposure to a 900 MHz Electromagnetic Field on the Dentate Gyrus of Rats: A Stereological and Histopathological Study.** Odaci, E., et al. *Brain Research* 1238:224–229. (2008). <https://www.ncbi.nlm.nih.gov/pubmed/18761003>

35. **Ultra High Frequency-Electromagnetic Field Irradiation During Pregnancy Leads to an Increase in Erythrocytes Micronuclei Incidence in Rat Offspring.** Ferreira, A., et al. *Life Sciences* 80(1):43-50. (2006). <https://www.ncbi.nlm.nih.gov/pubmed/16978664>

## II. EFFECTS ON CHILDREN AND ADOLESCENTS

1. **Development of health-based exposure limits for radiofrequency radiation from wireless devices using a benchmark dose approach.** Uche, U., et al. *Environmental Health*, 20(84). (2021). <https://ehjournal.biomedcentral.com/articles/10.1186/s12940-021-00768-1>
2. **Electromagnetic Fields, Pulsed Radiofrequency Radiation, and Epigenetics: How Wireless Technologies May Affect Childhood Development.** Sage, C. & Burgio, E. *Child Development* 89(1):129-136. (2017). <https://www.ncbi.nlm.nih.gov/pubmed/28504324>
3. **Prospective Cohort Analysis of Cellphone Use and Emotional and Behavioural Difficulties in Children.** Sudan, M., et al. *Journal of Epidemiology and Community Health* 70(12):1207-1213. (2016). <https://www.ncbi.nlm.nih.gov/pubmed/27217533>
4. **Radiofrequency-electromagnetic Field Exposures in Kindergarten Children.** Bhatt, C., et al. *Journal of Exposure Science and Environmental Epidemiology*. 27(5):497-504. (2016). <https://www.nature.com/articles/jes201655.pdf>
5. **Why Children Absorb More Microwave Radiation than Adults: The Consequences.** Morgan, L., et al. *Journal of Microscopy and Ultrastructure* 2(4):196-204. (2014). <https://www.sciencedirect.com/science/article/pii/S2213879X14000583>
- 6.
7. **A Prospective Study of In-Utero Exposure to Magnetic Fields and the Risk of Childhood Obesity.** Li, D., et al. *Scientific Reports* 2(540). (2012). <https://www.nature.com/articles/srep00540>
8. **Exposure to Extremely Low-Frequency Magnetic Fields and the Risk of Childhood Cancer: Update of the Epidemiological evidence.** Schüz, J. *Progress in Biophysics and Molecular Biology* 107(3):339-42. (2011). <https://www.sciencedirect.com/science/article/pii/S0079610711001076>
9. **Cell Phone Use and Behavioural Problems in Young Children.** Divan, HA., et al. *Journal of Epidemiol Community Health* 66(6):524-9. (2010). <https://www.ncbi.nlm.nih.gov/pubmed/21138897>
10. **Exposure to Radio-Frequency Electromagnetic Fields and Behavioral Problems in Bavarian Children and Adolescents.** Thomas, S., et al. *European Journal of Epidemiology* 25(2):135-41. (2009). <https://link.springer.com/article/10.1007/s10654-009-9408-x>

11. **The Sensitivity of Children to Electromagnetic Fields.** Kheifets, L., et al. *Deventer Journal of Pediatrics* 116(2):303-313. (2005).  
<http://pediatrics.aappublications.org/content/116/2/e303>

### III. BRAIN TUMORS

1. **Simulation of The Incidence of Malignant Brain Tumors in Birth Cohorts That Started Using Mobile Phones When They First Became Popular in Japan.** Sato, Y., et al. *Bioelectromagnetics* 40(3):143-149. (2019).  
<https://www.ncbi.nlm.nih.gov/pubmed/30875091>
2. **National Toxicology Technical Report on Cell Phones and Cancer.Toxicology and Carcinogenesis Studies in Sprague Dawley (Hsd:Sprague Dawley SD) Rats Exposed to Whole-body Radio Frequency Radiation at a Frequency (900 Mhz) and Modulations (GSM and CDMA) Used by Cell Phones.** National Toxicology Program TR595:1-466. (2018). [https://ntp.niehs.nih.gov/ntp/htdocs/lt\\_rpts/tr595\\_508.pdf](https://ntp.niehs.nih.gov/ntp/htdocs/lt_rpts/tr595_508.pdf)  
Summary: <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>
3. **Report of Final Results Regarding Brain and Heart Tumors in Sprague-Dawley Rats Exposed From Prenatal Life Unitl Natural Death to Mobile Phone Radiofrequency Field Representative of a 1.8 GHz GSM Base Station Environmental Emission.** Falcioni, L, et al. *Environmental Research* 165:496-503. (2018). <https://www.ncbi.nlm.nih.gov/pubmed/29530389>
4. **Exposure to Cell Phone Radiofrequency Changes Corticotrophin Hormone Levels and Histology of The Brain and Adrenal Glands in Male Wistar Rat.** Shahabi, S., et al. *Iranian Journal of Basic Medical Sciences* 21:1269-1274. (2018).  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6312682/>
5. **Brain Tumours: Rise in Glioblastoma Multiforme Incidence in England 1995-2015 Suggests an Adverse Envrionmental or Lifestyle Factor.** Philips, A., et al. *Journal of Environmental and Public Health* 2018(7910754). (2018).  
<https://www.hindawi.com/journals/jeph/2018/7910754/>
6. **The 2100 MHz Radiofrequency Radiation of a 3G-Mobile Phone and the DNA Oxidative Damage in Brain.** Sahin, D, et al. *Journal of Chemical Neuroanatomy* 75(Pt B):94-98. (2016). <http://www.sciencedirect.com/science/article/pii/S0891061816000041>
7. **Mobile Phone and Cordless Phone Use and the Risk for Glioma - Analysis of Pooled Case-Control Studies in Sweden 1997-2003 and 2007-2009.** Hardell, L. et al. *PathoPhysiology* 22(1):1-13. (2015). <http://www.ncbi.nlm.nih.gov/pubmed/25466607>

8. **Mobile Phone Radiation Causes Brain Tumors and Should Be Classified as a Probable Human Carcinogen.** Morgan, L., et al. *International Journal of Oncology* 46:1865-1871. (2015). <https://www.spandidos-publications.com/ijo/46/5/1865>
9. **Mobile Phone Use and Brain Tumours in the CERNAT Case-Control Study.** Coureau, G., et al. *Occupational & Environmental Medicine* 71(7):514-22 (2014). <http://www.ncbi.nlm.nih.gov/pubmed/24816517>
10. **Pooled Analysis of Case-Control Studies on Acoustic Neuroma Diagnosed 1997-2003 and 2007-2009 and Use of Mobile and Cordless Phones.** Hardell, L., et al. *International Journal of Oncology* 43(4):1036-1044. (2013). <http://www.ncbi.nlm.nih.gov/pubmed/23877578>
11. **Using the Hill Viewpoints from 1965 for Evaluating Strengths of Evidence of the Risk for Brain Tumors Associated with use of Mobile and Cordless Phones.** Hardell, L., et al. *Reviews on Environmental Health* 28(2-3):97-106. (2013). <http://www.ncbi.nlm.nih.gov/pubmed/24192496>
12. **Use of Mobile Phones and Cordless Phones is Associated with Increased Risk for Glioma and Acoustic Neuroma.** Hardell, L., Carlberg, M., et al. *PathoPhysiology* 20(2):85-110. (2013). <http://www.ncbi.nlm.nih.gov/pubmed/23261330>
13. **Mobile Phones and Head Tumours: A Critical Analysis of Case-Control Epidemiological Studies.** Levis, A.G., et al. *Open Environmental Sciences* 6(1):1-12. (2012). <https://benthamopen.com/contents/pdf/TOENVIRJ/TOENVIRJ-6-1.pdf>
14. **On the Association Between Glioma, Wireless Phones, Heredity and Ionising Radiation.** Carlberg, M., et al. *PathoPhysiology* 19(4):243-252. (2012). <http://www.ncbi.nlm.nih.gov/pubmed/22939605>
- 15.
16. **Mobile Phones and Head Tumours. The Discrepancies in Cause-Effect Relationships in the Epidemiological Studies - How Do They Arise?** Levis, A.G., et al. *Environmental Health* 10:59. (2011). <http://www.ncbi.nlm.nih.gov/pubmed/21679472>
17. **Indications of Possible Brain Tumour Risk in Mobile-Phone Studies: Should We Be Concerned?** Cardis, E., et al. *Occupational & Environmental Medicine* 68:169-171. (2011). <http://oem.bmj.com/content/early/2010/12/15/oem.2010.061358>
- 18.
19. **Estimating the Risk of Brain Tumors from Cell Phone Use: Published Case-Control Studies.** Morgan, LL. *Pathophysiology* 16(2-3):137-147. (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19356911>
20. **Cell Phones and Brain Tumors: A Review Including the Long-Term Epidemiologic Data.** Khurana, V.G., et al. *Surgical Neurology* 72(3):205-14. (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19328536>

21. **Epidemiological Evidence for an Association Between Use of Wireless Phones and Tumor Diseases.** Hardell, L., et al. *PathoPhysiology* 16(2-3):113-122. (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19268551>
22. **Mobile Phone, Cordless Phones and the Risk for Brain Tumours.** Hardell, L., et al. *International Journal of Oncology* 35(1):5-17 (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19513546>
23. **Histopathological Examinations of Rat Brains After Long-Term Exposure to GSM-900 Mobile Phone Radiation.** Grafström, G., et al. *Brain Research Bulletin* 77(5):257-63. (2008). <http://www.ncbi.nlm.nih.gov/pubmed/18782606>
24. **Mobile Phone Use and the Risk of Acoustic Neuroma.** Lonn, S., et al. *Epidemiology* 15(6):653-659. (2004). <https://www.ncbi.nlm.nih.gov/pubmed/15475713>

#### IV. PAROTID GLAND TUMORS

1. **Influence of Handheld Mobiles on Parotid: A Cohort Study.** Ranjitha, G., et al. *Journal of Indian Academy of Oral Medicine & Radiology* 29:254-258. (2017). <http://www.jiaomr.in/article.asp?issn=0972-1363;year=2017;volume=29;issue=4;spage=254;epage=258;aulast=Ranjitha>
2. **Does Cell Phone Use Increase the Chances of Parotid Gland Tumor Development? A Systematic Review and Meta-Analysis.** De Siqueira, EC., et al. *Journal of Oral Pathology and Medicine* 46(7) 480-483. (2017). <https://www.ncbi.nlm.nih.gov/pubmed/27935126?dopt=Abstract>
3. **Correlation Between Cellular Phone Use and Epithelial Parotid Gland Malignancies.** Duan, Y., et al. *International Journal of Oral and Maxillofacial Surgery* 40(9):966-972. (2011). <http://www.ncbi.nlm.nih.gov/pubmed/21474287>
4. **Mobile Phones Use and Risk of Tumors: A Meta-Analysis.** Myung, SK., et al. *Journal of Clinical Oncology* 27(33):5565-72. (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19826127>
5. **Epidemiological Evidence for an Association Between use of Wireless Phones and Tumor Diseases.** Hardell, L., et al. *PathoPhysiology* 16(2-3):113-122. (2009). <http://www.sciencedirect.com/science/article/pii/S0928468009000091>
6. **Cell Phone Use and Risk of Benign and Malignant Parotid Gland Tumors - A Nationwide Case-Control Study.** Sadetzki, S., et al. *American Journal of Epidemiology* 167(4):457-467. (2007). <http://aje.oxfordjournals.org/content/167/4/457.abstract>

## V. OTHER MALIGNANCIES

1. **The Carcinogenic Potential of Non-Ionizing Radiations: The Cases of S-50 Hz MF and 1.8 GHz GSM Radiofrequency Radiation.** Soffritti, M., et al. *Basic & Clinical Pharmacology & Toxicology* 1125(Suppl.3):58-69. (2019).  
<https://onlinelibrary.wiley.com/doi/epdf/10.1111/bcpt.13215>
2. **National Toxicology Technical Report on Cell Phones and Cancer.Toxicology and Carcinogenesis Studies in Sprague Dawley (Hsd:Sprague Dawley SD) Rats Exposed to Whole-body Radio Frequency Radiation at a Frequency (900 Mhz) and Modulations (GSM and CDMA) Used by Cell Phones.** National Toxicology Program TR595:1-466. (2018).  
[https://ntp.niehs.nih.gov/ntp/htdocs/lt\\_rpts/tr595\\_508.pdf?utm\\_source=direct&utm\\_medium=prod&utm\\_campaign=ntpgolinks&utm\\_term=tr595](https://ntp.niehs.nih.gov/ntp/htdocs/lt_rpts/tr595_508.pdf?utm_source=direct&utm_medium=prod&utm_campaign=ntpgolinks&utm_term=tr595)  
Summary: <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>
3. **Tumor Promotion by Exposure to Radiofrequency Electromagnetic Fields Below Exposure Limits for Humans.** Lerchl, A., et al. *Biochemical and Biophysical Research Communications* 459(4):585-590. (2015).  
<http://www.sciencedirect.com/science/article/pii/S0006291X15003988>
4. **Swedish Review Strengthen Grounds for Concluding that Radiation from Cellular and Cordless Phones is a Probable Human Carcinogen.** Davis, DL., et al. *Pathophysiology* 20(2):123-129. (2013). <http://www.ncbi.nlm.nih.gov/pubmed/23664410>
5. **Multifocal Breast Cancer in Young Women with Prolonged Contact Between Their Breasts and Their Cellular Phones.** West, J., et al. *Case Reports in Medicine* 2013(354682). (2013). <http://www.hindawi.com/journals/crim/2013/354682/>
6. **Case-Control study of the Use of Mobile and Cordless Phones and the Risk for Malignant Melanoma in the Head and Neck Region.** Hardell, L., et al. *Pathophysiology* 18(4):325-333 (2011).  
<http://www.sciencedirect.com/science/article/pii/S0928468011000320>
7. **Epidemiological Evidence for an Association Between Use of Wireless Phones and Tumor Diseases.** Hardell, L., et al. *PathoPhysiology* 16(2-3):113-122. (2009).  
<http://www.ncbi.nlm.nih.gov/pubmed/19268551>
8. **Study on Potential Effects of “902 MHz GSM-type Wireless Communication Signals” on DMBA-Induced Mammary Tumours in Sprague-Dawley Rats.** Hruby, R., et al. *Mutation Research* 649(1-2):34-44. (2008).  
<http://www.ncbi.nlm.nih.gov/pubmed/17981079>

## VI. DNA DAMAGE AND GENE EXPRESSION CHANGES

1. **National Toxicology Technical Report on Cell Phones and Cancer. Toxicology and Carcinogenesis Studies in Sprague Dawley (Hsd:Sprague Dawley SD) Rats Exposed to Whole-body Radio Frequency Radiation at a Frequency (900 Mhz) and Modulations (GSM and CDMA) Used by Cell Phones.** National Toxicology Program TR595:1-466. (2018).  
[https://ntp.niehs.nih.gov/ntp/htdocs/lt\\_rpts/tr595\\_508.pdf?utm\\_source=direct&utm\\_medium=prod&utm\\_campaign=ntpgolinks&utm\\_term=tr595](https://ntp.niehs.nih.gov/ntp/htdocs/lt_rpts/tr595_508.pdf?utm_source=direct&utm_medium=prod&utm_campaign=ntpgolinks&utm_term=tr595)  
Summary: <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>
2. **Impact of radiofrequency radiation on DNA damage and antioxidants in peripheral blood lymphocytes of humans residing in the vicinity of mobile phone base stations.** Zothansiam, M., et al. *Electromagnetic Biology and Medicine* 36(3):295-305. (2017).  
<https://pubmed.ncbi.nlm.nih.gov/28777669/>
3. **Microwaves from Mobile Phones Inhibit 53BP1 Focus Formation in Human Stem Cells More Strongly Than in Differentiated Cells: Possible Mechanistic Link to Cancer Risk.** Markova, E., et al. *Environmental Health Perspectives* 118(3):394-399. (2010). <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854769/>
4. **Radiofrequency Radiation and Gene/Protein Expression: A Review.** McNamee, JP., et al. *Radiation Research* 172(3):265-287. (2009).  
<http://www.ncbi.nlm.nih.gov/pubmed/19708776>
5. **Evaluation of HSP70 Expression and DNA Damage in Cells of a Human Trophoblast Cell Line Exposed to 1.8GHz Amplitude-Modulated Radiofrequency Fields.** Valbonesi, P., et al. *Radiation Research* 169(3):270-279. (2008).  
<http://www.ncbi.nlm.nih.gov/pubmed/18302482>
6. **Gene and Protein Expression Following Exposure to Radiofrequency Fields from Mobile Phones.** Vanderstraeten, J., et al. *Environmental Health Perspectives* 116(9):1131-5. (2008). <https://www.ncbi.nlm.nih.gov/pubmed/18795152>
7. **Nonthermal Effects of RadioFrequency-Field Exposure on Calcium Dynamics in Stem Cell-derived Neuronal Cells: Elucidation of Calcium Pathways.** Rao, V.S., et al. *Radiation Research* 169(3):319-329. (2008).  
<https://www.ncbi.nlm.nih.gov/pubmed/18302487>
8. **Gene Expression Changes in the Skin of Rats Induced by Prolonged 35 GHz Millimeter-Wave Exposure.** Millenbaugh, NJ., et al. *Radiation Research* 169(3):288-300. (2008). <http://www.ncbi.nlm.nih.gov/pubmed/18302488>
9. **DNA Damage in Molt-4 T-lymphoblastoid Cells Exposed to Cellular Telephone Radiofrequency Fields in Vitro.** Philips, J., et al. *Bioelectrochemistry and Bioenergetics*

45(1):103-110. (1998).

<http://www.sciencedirect.com/science/article/pii/S0302459898000749>

## VII. NEUROLOGICAL/COGNITIVE EFFECTS

1. **Early-Life Exposure to Pulsed LTE Radiofrequency Fields Causes Persistent Changes in Activity and Behavior in C57BL/6 J Mice.** Broom, K., et al. *Bio Electro Magnetism* 40(7):498-511. (2019).  
<https://onlinelibrary.wiley.com/doi/full/10.1002/bem.22217>
2. **Are Rises in Electro-Magnetic Field in The Human Environment, Interacting with Multiple Environmental Pollutions, The Tripping Point for Increases in Neurological Deaths in the Western World?** Pritchard, C., et al. *Medical Hypotheses* 127: 76-83. (2019).  
<https://www.sciencedirect.com/science/article/pii/S0306987719300040?via%3Dihub>
3. **Effect of 1800-2100 MHz Electromagnetic Radiation on Learning-Memory and Hippocampal Morphology in Swiss Albino Mice.** Kishore, G., et al. *Journal of Clinical and Diagnostic Research* 12(2):14-17. (2019).  
[https://www.researchgate.net/publication/330729256\\_Effect\\_of\\_1800-2100\\_MHz\\_Electromagnetic\\_Radiation\\_on\\_Learning-Memory\\_and\\_Hippocampal\\_Morphology\\_in\\_Swiss\\_Albedo\\_Mice](https://www.researchgate.net/publication/330729256_Effect_of_1800-2100_MHz_Electromagnetic_Radiation_on_Learning-Memory_and_Hippocampal_Morphology_in_Swiss_Albedo_Mice)
4. **Monitoring of BALB/C Strain Mice Health, Investigation of Behavior, Hematological Parameters Under the Effect of an Electromagnetic Field.** Zymantiene, J., et al. *Medycyna Weterynaryjna* 75(03):158-163. (2019).  
[https://www.researchgate.net/publication/330652562\\_Monitoring\\_of\\_BALBC\\_strain\\_mice\\_health\\_investigation\\_of\\_behavior\\_hematological\\_parameters\\_under\\_the\\_effect\\_of\\_an\\_electromagnetic\\_field](https://www.researchgate.net/publication/330652562_Monitoring_of_BALBC_strain_mice_health_investigation_of_behavior_hematological_parameters_under_the_effect_of_an_electromagnetic_field)
5. **2.45 GHz Microwave Radiation Impairs Learning, Memory, and Hippocampal Synaptic Plasticity in The Rat.** Karimi, N., et al. *Toxicology and Industrial Health* 34(12):873-883. (2018). <https://www.ncbi.nlm.nih.gov/pubmed/30345889>
6. **Mobile Phone distance From Head and Temperature Changes of Radio Frequency Waves on Brain Tissue.** Forouharmajd, F., et al. *International Journal of Preventative Medicine* 9(1):61. (2018). <https://www.ncbi.nlm.nih.gov/pubmed/30123435>
7. **A Prospective Cohort Study of Adolescents' Memory Performance and Individual Brain Dose of Microwave Radiation from Wireless Communication.** Foerster, M., et al. *Environmental Health Perspectives* 126(7). (2018).  
<https://ehp.niehs.nih.gov/ehp2427/#tab3>
8. **Electromagnetic Radiation 2450 MHz Exposure Causes Cognition Deficit with Mitochondrial Dysfunction and Activation of Intrinsic Pathway of Apoptosis in**

- Rats.** Gupta, S.K., et al. *Journal of Biosciences* 43(2) 263-276. (2018).  
<https://www.ias.ac.in/article/fulltext/jbsc/043/02/0263-0276>
9. **The Effect of Wi-Fi Electromagnetic Waves in Unimodal and Multimodal Object Recognition Tasks in Male Rats.** Hassanshahi, A., et al. *Neurological Sciences* 38(6):1069-1076. (2017). <https://www.ncbi.nlm.nih.gov/pubmed/28332042>
  10. **Effects of Short and Long Term Electromagnetic Fields Exposure on the Human Hippocampus.** Deniz, O.G., et al. *Journal of Microscopy and Ultrastructure* 5(4):191-197. (2017). <https://www.sciencedirect.com/science/article/pii/S2213879X17300524>
  11. **Effects of Long Term Exposure of 900-1800 MHz Radiation Emitted from 2G Mobile Phone on Mice Hippocampus – A Histomorphometric Study.** Mugunthan, N., et al. *Journal of Clinical and Diagnostic Research* 10(8):AF01-6. (2016).  
<https://www.ncbi.nlm.nih.gov/pubmed/27656427?dopt=Abstract>
  12. **Effect of Mobile Phone Radiation on Pentylene-tetrazole-Induced Seizure Threshold in Mice.** Kouchaki, E., et al. *Iranian Journal of Basic Medical Sciences* 19(7):800-3. (2016). <https://www.ncbi.nlm.nih.gov/pubmed/27635206?dopt=Abstract>
  13. **Effects of 3 Hz and 60Hz Extremely Low Frequency Electromagnetic Fields on Anxiety-Like Behaviors, Memory Retention of Passive Avoidance and ElectroPhysiological Properties of Male Rats.** Rostami, A., et al. *Journal of Lasers in Medical Science* 7(2):120-125. (2016). <http://www.ncbi.nlm.nih.gov/pubmed/27330708>
  14. **Short-Term Memory in Mice is Affected by Mobile Phone Radiation.** Ntzouni, MP., et al. *PathoPhysiology* 18(3):193-199. (2011).  
<http://www.ncbi.nlm.nih.gov/pubmed/21112192>
  15. **Use of Mobile Phones and Changes in Cognitive Function in Adolescents.** Thomas, S., et al. *Occupational Environmental Medicine* 67(12):861-866. (2010).  
<http://www.ncbi.nlm.nih.gov/pubmed/20798018>
  16. **Increased Blood-Brain Barrier Permeability in Mammalian Brain 7 Days After Exposure to the Radiation from a GSM-900 Mobile Phone.** Nittby, H., et al. *PathoPhysiology* 16(2-3):103-12. (2009).  
<http://www.ncbi.nlm.nih.gov/pubmed/19345073>
  17. **Effects of GSM 1800 MHz on Dendritic Development of Cultured Hippocampal Neurons.** Ning, W., et al. *Acta Pharmacologica Sinica* 28(12):1873-1880. (2007).  
<http://www.ncbi.nlm.nih.gov/pubmed/18031599>
  18. **Neurological Effects of Radiofrequency Electromagnetic Radiation.** Lai, H. *Advances in Electromagnetic Fields in Living Systems* 1:27-80. (1994).  
[http://link.springer.com/chapter/10.1007%2F978-1-4615-2542-4\\_2#page-1](http://link.springer.com/chapter/10.1007%2F978-1-4615-2542-4_2#page-1)

## VIII. CARDIOVASCULAR EFFECTS

1. **Exposure to cell phones reduces heart rate variability in both normal-weight and obese normotensive medical students.** Alassiri, M., et al. *Explore (NY)*. 16(4):264-270. (2020). <https://www.ncbi.nlm.nih.gov/pubmed/32249199>
2. **Assessment of electromagnetic fields, vibration and sound exposure effects from multiple transceiver mobile phones on oxidative stress levels in serum, brain and heart tissue.** Usman, J.D., et al. *Scientific African*. 7(e00271). (2020). <https://www.sciencedirect.com/science/article/pii/S2468227620300090>
3. **Aluminium foil dampened the adverse effect of 2100 MHz mobile phone-induced radiation on the blood parameters and myocardium in rats.** Kalanjati, V.P., et al. *Environmental Science and Pollution Research*. 26(12):11686-11689. (2019). <https://www.ncbi.nlm.nih.gov/pubmed/30806932>
4. **National Toxicology Technical Report on Cell Phones and Cancer. Toxicology and Carcinogenesis Studies in Sprague Dawley (Hsd:Sprague Dawley SD) Rats Exposed to Whole-body Radio Frequency Radiation at a Frequency (900 Mhz) and Modulations (GSM and CDMA) Used by Cell Phones.** *National Toxicology Program* TR595:1-466. (2018). [https://ntp.niehs.nih.gov/ntp/htdocs/lt\\_rpts/tr595\\_508.pdf?utm\\_source=direct&utm\\_medium=prod&utm\\_campaign=ntpgolinks&utm\\_term=tr595](https://ntp.niehs.nih.gov/ntp/htdocs/lt_rpts/tr595_508.pdf?utm_source=direct&utm_medium=prod&utm_campaign=ntpgolinks&utm_term=tr595)  
Summary: <https://ntp.niehs.nih.gov/whatwestudy/topics/cellphones/index.html>
5. **Wi-Fi Is an Important Threat to Human Health.** Pall, M. *Environmental Research*. 164:405-416. (2018). <https://pubmed.ncbi.nlm.nih.gov/29573716/>
6. **Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission.** Falcioni, L., et al. *Environmental Research*. 165:496-503. (2018). <https://www.sciencedirect.com/science/article/abs/pii/S0013935118300367>
7. **Cardiovascular disease: Time to identify emerging environmental risk factors.** Bandara, P., et al. *European Journal of Preventative Cardiology*. 24(17):1819-1823. (2017). <https://journals.sagepub.com/doi/10.1177/2047487317734898>
8. **The effects of the duration of mobile phone use on heart rate variability parameters in healthy subjects.** Ekici, B., et al. *The Anatolian Journal of Cardiology*. 16(11):833-838. (2016). <https://www.ncbi.nlm.nih.gov/pubmed/27109242>
9. **Effects of acute exposure to WIFI signals (2.45 GHz) on heart variability and blood pressure in Albinos rabbit.** Saili, L., et al. *Environmental Toxicology and Pharmacology*. 40(2):600-605. (2015). <https://www.sciencedirect.com/science/article/pii/S1382668915300594>

10. **Electromagnetic fields promote severe and unique vascular calcification in an animal model of ectopic calcification.** Shuvy, M., et al. *Experimental and Toxicologic Pathology*. 66(7):345-350. (2014). <https://pubmed.ncbi.nlm.nih.gov/24882371/>
11. **The effects of prenatal exposure to a 900-MHz electromagnetic field on the 21-day-old male rat heart.** Türedi, S. et al. *Electromagnetic Biology and Medicine*. 34(4):390-397. (2014). <https://www.ncbi.nlm.nih.gov/pubmed/25166431>
12. **Electromagnetic fields act via activation of voltage-gated calcium channels to produce beneficial or adverse effects.** Pall, M.L. *Journal of Cellular and Molecular Medicine*. 17(8):958–965. (2013). <https://www.ncbi.nlm.nih.gov/pubmed/23802593>
13. **Electromagnetic fields produced by incubators influence heart rate variability in newborns.** Bellieni, C.V., et al. *Archives of Disease in Childhood – Fetal and Neonatal Edition*. 93(4):F298-F301. (2008). <https://www.ncbi.nlm.nih.gov/pubmed/18450804>
14. **Radiofrequency/microwave radiation biological effects and Safety standards: A review.** Bolen, S.M. *Griffiss Air Force Base, New York: United States Air Force Materiel Command*. 1-32. (1994). [https://electromagnetichealth.org/wp-content/uploads/2015/01/RF\\_effects\\_USAF.pdf](https://electromagnetichealth.org/wp-content/uploads/2015/01/RF_effects_USAF.pdf)
15. **Biological Effects of Radio Frequency Radiation in Eurasian Communist Countries.** Adams, R.L., et al. *U.S. Medical Intelligence and Information Agency*. 1-35. (1975). <https://mdsafetech.files.wordpress.com/2019/12/army-intelligence-research-on-biological-effects-of-radio-frequency-radiation-in-eurasian-communist-countries-1976..pdf>

## IX. MALE FERTILITY

1. **Long-Term Exposure to 4G Smartphone Radiofrequency Electromagnetic Radiation Diminished Male Reproductive Portential by Directly Disrupting Spck3-MMP2-BTB Axis in the Testes of Adult Rats.** Yu, G., et al. *Science of The Total Environment* 698(133860). (2020). <https://www.sciencedirect.com/science/article/pii/S0048969719338082?via%3Dihub>
2. **Radiations and Male Fertility.** Kesari, K., et al. *Reproductive Biology and Endocrinology* 16(118). (2018). <https://rbej.biomedcentral.com/articles/10.1186/s12958-018-0431-1>
3. **The Effect of 2.45 GHz Non-Ionizing Radiation on the Structure and Ultrastructure of The Testis in Juvenile Rats.** Simaiova, V., et al. *Histology and Histopathology* 34(4):18049. (2018). [https://www.researchgate.net/publication/327941558\\_The\\_effect\\_of\\_245\\_GHz\\_non-ionizing\\_radiation\\_on\\_the\\_structure\\_and\\_ultrastructure\\_of\\_the\\_testis\\_in\\_juvenile\\_rats](https://www.researchgate.net/publication/327941558_The_effect_of_245_GHz_non-ionizing_radiation_on_the_structure_and_ultrastructure_of_the_testis_in_juvenile_rats)

4. **Modulatory Effect of 900 MHz Radiation on Biochemical and Reproductive Parameters in Rats.** Narayanan, SN., et al. *Bratislava Medical Journal* 119(9):581-587. (2018). <https://www.ncbi.nlm.nih.gov/pubmed/30226070>
5. **Aloe Arborescens Juice Prevents EMF-Induced Oxidative Stress and Thus Protects from Pathophysiology in the Male Reproductive System In Vitro.** Solek, P., et al. *Environmental Research* 166:141-149. (2018). <https://www.sciencedirect.com/science/article/pii/S0013935118301063?via=ihub>
6. **Radiofrequency Radiation (900 MHz)-Induced DNA Damage and Cell Cycle Arrest in Testicular Germ Cells in Swiss Albino Mice.** Pandey, N., et al. *Toxicology and Industrial Health* 33(4) 373-384. (2017). <https://www.ncbi.nlm.nih.gov/pubmed/27738269>
7. **The Effects of Radiofrequency Electromagnetic Radiation on Sperm Function.** Houston, BJ., et al. *Reproduction* 152(6):R263-R276. (2016). <https://pubmed.ncbi.nlm.nih.gov/27601711/>
8. **Male Fertility and its Association with Occupational and Mobile Phone Tower Hazards: An Analytical Study.** Al-Quzwini, O., et al. *Middle East Fertility Society Journal* 21(4):236-240. (2016). <https://www.sciencedirect.com/science/article/pii/S1110569016300127>
9. **Sperm DNA Damage – The Effect of Stress and Everyday Life Factors.** Radwan, M., et al. *International Journal of Impotence Research* 28(4):148-154. (2016). <https://www.ncbi.nlm.nih.gov/pubmed/27076112>
10. **Electromagnetic Radiation at 900 MHz Induces Sperm Apoptosis through bcl-2, bax and caspase-3 Signaling Pathways in Rats.** Liu, Q., et al. *Journal of Reproductive Health* 12:65. (2015). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4523914/>
11. **Habits of Cell Phone usage and Sperm Quality - Does It Warrant Attention?** Zilberlicht, A., et al. *Reproductive BioMedicine Online* 31(3):421-426. (2015). <http://www.ncbi.nlm.nih.gov/pubmed/26206279>
12. **In Vitro Effect of Cell Phone Radiation on Motility, DNA Fragmentation and Clusterin Gene Expression in Human Sperm.** Zalata, A., et al. *International Journal of Fertility and Sterility* 9(1):129-136. (2015). <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4410031/>
13. **Extremely Low frequency Magnetic Fields Induce Spermatogenic Germ Cell Apoptosis: Possible Mechanism.** Lee, S., et al. *BioMed Research International* 2014(567183). (2014). <https://www.hindawi.com/journals/bmri/2014/567183/>
14. **Effect of mobile telephones on sperm quality: A systematic review and meta-analysis.** Adams, J., et al. *Environment International* 70:106-112. (2014). <https://www.sciencedirect.com/science/article/pii/S0160412014001354>

- 15.
16. **Effect of Electromagnetic Field Exposure on the Reproductive System.** Gye, M., et al. *Journal of Clinical and Experimental Reproductive Medicine* 39(1):1-19. (2012). <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3341445/>
17. **Effects of the Exposure of Mobile Phones on Male Reproduction: A Review of the Literature.** La Vignera, S., et al. *Journal of Andrology* 33(3):350-356. (2012). <https://www.ncbi.nlm.nih.gov/pubmed/21799142>
18. **Use of Laptop Computers Connected to Internet Through Wi-Fi Decreases Human Sperm Motility and Increases Sperm DNA Fragmentation.** Avendano, C., et al. *Fertility and Sterility* 97(1):39-45. (2012). [https://www.fertstert.org/article/S0015-0282\(11\)02678-1/fulltext](https://www.fertstert.org/article/S0015-0282(11)02678-1/fulltext)
19. **Exposure to Magnetic fields and the Risk of Poor Sperm Quality.** Li, D.K, et al. *Journal of Reproductive Toxicology* 29(1):86-92. (2010). <http://www.ncbi.nlm.nih.gov/pubmed/19910156>
20. **Mobile Phone Radiation Induces Reactive Oxygen Species Production and DNA Damage in Human Spermatozoa *In Vitro*.** De Luliis, G., et al. *PLoS ONE* 4(7). (2009). <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0006446>
21. **Radio Frequency Electromagnetic Radiation (Rf-EMR) from GSM Mobile Phones Induces Oxidative Stress and Reduces Sperm Motility in Rats.** Mailankot, M., et al. *Clinics (San Paulo)* 64(6):561-5. (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19578660>
22. **Cell Phones: Modern Man's Nemesis?** Makker, K., et al. *Reproductive BioMedicine Online* 18(1):148-157. (2009). <http://www.ncbi.nlm.nih.gov/pubmed/19146782>
23. **Indicative SAR Levels Due to an Active Mobile Phone in a Front Trouser Pocket in Proximity to Common Metallic Objects.** Whittow, WG., et al. *IEEE Xplore* 149-152 (2008). <http://ieeexplore.ieee.org/xpl/articleDetails.jsp?reload=true&arnumber=4516888>
24. **Effect of Cell Phone Usage on Semen Analysis in Men Attending Infertility Clinic: An Observational Study.** Agarwal, A., et al. *Fertility and Sterility* 89(1):124-128. (2008). <http://www.ncbi.nlm.nih.gov/pubmed/17482179>
25. **Cell Phones and Male Infertility: Dissecting the Relationship.** Deepinder, F., et al. *Reproductive BioMedicine Online* 15(3):266-270. (2007). <http://www.ncbi.nlm.nih.gov/pubmed/17854521>
26. **Evaluation of the Effect of Using Mobile Phones on Male Fertility.** Wdowiak, A., et al. *Annals of Agricultural and Medicine* 14(1):169-172. (2007). <http://www.ncbi.nlm.nih.gov/pubmed/17655195>

## X. ELECTROMAGNETIC SENSITIVITY

1. **Becoming Electro-Hypersensitive: A Replication Study.** Dieudonne, M. *Bioelectromagnetic* 40:188-200. (2019).  
<https://www.ncbi.nlm.nih.gov/pubmed/30920673>
2. **Functional Brain MRI in Patients Complaining of Electrohypersensitivity After Long Term Exposure to Electromagnetic Fields.** Heuser, G. et al. *Reviews on Environmental Health* 32(3):291-299. (2017).  
<https://www.ncbi.nlm.nih.gov/pubmed/28678737>
3. **“Hot Nano Spots” as an Interpretation of So-Called Non-Thermal Biological Mobile Phone Effects.** Pfutzner, H. *Journal of Electromagnetic Analysis and Applications* 8(3):62-69. (2016). <http://www.scirp.org/journal/PaperInformation.aspx?PaperID=65212>
4. **Analysis of the Genotoxic Effects of Mobile Phone Radiation Using Buccal Micronucleus Assay: A Comparative Evaluation.** Banerjee, S., et al. *Journal of Clinical and Diagnostic Research* 10(3):ZC82-ZC85. (2016).  
<https://www.ncbi.nlm.nih.gov/pubmed/27135009>
5. **Tinnitus and Cell Phones: The Role of Electromagnetic Radiofrequency Radiation.** Medeiros, L., et al. *Brazilian Journal of Otorhinolaryngology* 82(1):97-104. (2016).  
<http://www.sciencedirect.com/science/article/pii/S1808869415001639>
6. **Microwave Frequency Electromagnetic Fields (EMFs) Produce Widespread Neuropsychiatric Effects Including Depression.** Pall, M. *Journal of Chemical Neuroanatomy*. 7(Part B):43-51. (2016).  
<https://www.sciencedirect.com/science/article/pii/S0891061815000599?via%3Dihub>
7. **Subjective Symptoms Related to GSM Radiation from Mobile Phone Base Stations: a Cross-Sectional Study.** Gomez-Perretta, C., et al. *BMJ Open* 3(12). (2013).  
<http://bmjopen.bmj.com/content/3/12/e003836.full>
8. **Green Communication- A Stipulation to Reduce Electromagnetic Hypersensitivity from Cellular Phones.** Kumar, N., et al. *Procedia Technology* 4:682-686. (2012).  
<http://www.sciencedirect.com/science/article/pii/S2212017312003891>
9. **Electromagnetic Hypersensitivity: Fact or Fiction?** Genius, S. et al. *Science of the Total Environment* 414(1):103-112. (2012).  
<http://www.sciencedirect.com/science/article/pii/S0048969711012733>
10. **Neurobehavioral Effects Among Inhabitants Around Mobile Phone Base Stations.** Abdel-Rassoul, G., et al. *NeuroToxicology* 28(2):434-440. (2007).  
<http://www.sciencedirect.com/science/article/pii/S0161813X06001835>
11. **Electrohypersensitivity: State-Of-The-Art of A Functional Impairment.** Johansson, O. *Electromagnetic Biology and Medicine* 25(4): 245-258. (2006).  
<https://www.ncbi.nlm.nih.gov/pubmed/17178584>

12. **Electromagnetic Hypersensitivity: Biological Effects of Dirty Electricity With Emphasis on Diabetes and Multiple Sclerosis.** Havas, M. *Electromagnetic Biology and Medicine* 25(4): 259-268. (2006). <https://www.ncbi.nlm.nih.gov/pubmed/17178585>
13. **Establishing the Health Risks of Exposure to Radiofrequency Fields Requires Multidisciplinary Research.** Hietanen, M. *Scandinavian Journal of Work, the Environment, and Health* 32(3):169-170. (2006). [http://www.sjweh.fi/show\\_abstract.php?abstract\\_id=994](http://www.sjweh.fi/show_abstract.php?abstract_id=994)
14. **Hypersensitivity of Human Subjects to Environmental Electric and Magnetic Field Exposure: A Review of the Literature.** Levallois, P. *Environmental Health Perspectives* 110(4):613-8. (2002). <https://ehp.niehs.nih.gov/doi/pdf/10.1289/ehp.02110s4613>
15. **Electric Hypersensitivity and Neurophysiological Effects of Cellular Phones – Facts of Needless Anxiety.** Harma, M. *Scandinavian Journal of Work, the Environment and Health* 26(2):85-86. (2000). [http://www.sjweh.fi/show\\_abstract.php?abstract\\_id=515](http://www.sjweh.fi/show_abstract.php?abstract_id=515)
16. **Radiofrequency (RF) Sickness in the Lilienfeld Study: An Effect of Modulated Microwaves?** Liakouris, A. *Archives of Environmental Health: An International Journal*. 53(3):236-238 (1998). <https://www.tandfonline.com/doi/abs/10.1080/00039899809605701?journalCode=vzeh20>

## XI. IMPLANTED MEDICAL DEVICES

1. **Ad Hoc Electromagnetic Compatibility Testing of Non-Implantable Medical Devices and Radio Frequency Identification.** Seidman S., et al. *Biomedical Engineering Online* 12:71. (2013). <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3716957/>
2. **Electromagnetic Interference of Pacemakers.** Lakshmanadoss, U., et al. *Intech* 229-252. (2011). <http://cdn.intechopen.com/pdfs-wm/13783.pdf>
3. **Interference Between Mobile Phones and Pacemakers: A Look Inside.** Censi, F., et al. *Annali Dell'Istituto Superiore di Sanità* 43(3):254-259. (2007). <http://www.ncbi.nlm.nih.gov/pubmed/17938456>
4. **Electromagnetic Interference on Pacemakers.** Erdogan, O. *Indian Pacing and Electrophysiology Journal* 2(3):74-78. (2002). <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1564060/>
5. **Electromagnetic Interference in Patients with Implanted Cardioverter-Defibrillators and Implantable Loop Recorders.** Sousa, M., et al. *Indian Pacing and*

*Electrophysiology Journal* 2(3):79-84. (2002).  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1564059/>

6. **Radiofrequency Interference with Medical Devices. A Technical Information Statement.** *IEEE Engineering in Medicine and Biology Magazine* 17(3):111-4. (1998).  
<http://www.ncbi.nlm.nih.gov/pubmed/9604711>
7. **Cellular Telephones and Pacemakers: Urgent Call or Wrong Number?** Ellenbogen, KA., et al. *Journal of the American College of Cardiology* 27(6):1478-9. (1996).  
<http://www.ncbi.nlm.nih.gov/pubmed/8626961>

## XII. 5G EFFECTS

1. **Millimeter (MM) wave and microwave frequency radiation produce deeply penetrating effects: the biology and the physics.** Pall, M. *Reviews on Environmental Health*. 10.1515/reveh-2020-0165. (2021) <https://pubmed.ncbi.nlm.nih.gov/34043892/>
2. **Model of Steady-state Temperature Rise in Multilayer Tissues Due to Narrow-beam Millimeter-wave Radiofrequency Field Exposure.** Gajda, Gregory B., et al. *Health Physics* 117(3):254-266. (2019). <https://pubmed.ncbi.nlm.nih.gov/31125321/>
3. **Untargeted Metabolomics Unveil Alterations of Biomembranes Permeability in HumanHaCaT Keratinocytes Upon 60 HGz Millimeter-Wave Exposure.** Pogam, Pierre., et al. *Scientific Reports* 9(9343).(2019).  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6597695/>
4. **Ocular Response to Millimeter Wave Exposure Under Different Levels of Humidity.** Kojima, M., et al. *Journal of Infrared Milli Terahz Waves* 40:574–584. (2019).  
<https://link.springer.com/article/10.1007/s10762-019-00586-0>
5. **Millimeter Wave Radiation Activates Leech Nociceptors via TRPV1-Like Receptor Sensitization.** Romanenko, S., et al. *Biophysical Journal* 116(12):2331-2345. (2019).  
<https://www.biorxiv.org/content/biorxiv/early/2018/11/28/480665.full.pdf>
6. **Systematic Derivation of Safety Limits for Time-Varying 5G Radiofrequency Exposure Based on Analytical Models and Thermal Dose.** Neufeld, E., et al. *Health Physics Society* 115(6):705-711. (2018).  
<https://www.ncbi.nlm.nih.gov/pubmed/30247338>
7. **Towards 5G Communication Systems: Are There Health Implications?** Ciaula, AD. *International Journal of Hygiene and Environmental Health* 367-375. (2018).  
<https://www.sciencedirect.com/science/article/pii/S1438463917308143>

8. **5G Wireless Telecommunications Expansion: Public Health and Environmental Implications.** Russell, C.L. *Environmental Research* 165:484-495. (2018).  
<https://www.sciencedirect.com/science/article/pii/S0013935118300161>
9. **The Human Skin As A Sub-THz Receiver – Does 5G Pose a Danger To It or Not?** Betzalel, N., et al. *Environmental Research* 163:208-216 (2018).  
<https://www.sciencedirect.com/science/article/pii/S0013935118300331?via%3Dihub>
10. **The Modeling of the Absorbance of Sun-THz Radiation by Human Skin.** Betzalel, N., et al. *IEEE Transactions on Terahertz Science and Technology* 7(5):521-528. (2017).  
<https://ieeexplore.ieee.org/document/8016593/>
11. **Human Exposure to RF Fields in 5G Downlink.** Nasim, I. et al. *Georgia Southern University* (2017). <https://arxiv.org/pdf/1711.03683.pdf>
12. **The Human body and Millimeter-Wave Wireless Communication Systems: Interactions and Implications.** Wu, T., et al. *IEEE International Conference on Communications* (2015). <https://ieeexplore.ieee.org/document/7248688>
13. **State of Knowledge on Biological Effects at 40-60 GHz.** Drean, Y., et al. *Comptes Rendus Physique* 14(5):402-411. (2013).  
<https://www.sciencedirect.com/science/article/pii/S1631070513000480>
14. **Effects of millimeter waves radiation on cell membrane-A brief review.** Ramundo-Orlando, Alfonsina. *Journal of Infrared, Millimeter, and Terahertz Waves* 31(12):1400-1411 (2010).  
[https://www.researchgate.net/publication/220043219\\_Review\\_Article\\_Effects\\_of\\_millimeter\\_waves\\_radiation\\_on\\_cell\\_membrane](https://www.researchgate.net/publication/220043219_Review_Article_Effects_of_millimeter_waves_radiation_on_cell_membrane)
15. **Human Skin as Arrays of Helical Antennas in Millimeter and Submillimeter Wave Range.** Feldman, Y., et al. *The American Physical Society* 100(12):128102. (2008).  
<https://www.ncbi.nlm.nih.gov/pubmed/18517913>

### XIII. WILDLIFE AND PLANTS

#### WILDLIFE

1. **Increased aggression and reduced aversive learning in honey bees exposed to extremely low frequency electromagnetic fields.** Shepherd, S., et al. *PLoS ONE* 14 (10):e0223614 (2019).  
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0223614>
2. **Exposure of Insects to Radio-Frequency Electromagnetic Fields from 2 to 120 GHz.** Theilens, A., et al. *Scientific Reports*. 8(3924):1-10. (2018).  
<https://www.nature.com/articles/s41598-018-22271-3.pdf>

3. **Anthropogenic radiofrequency electromagnetic fields as an emerging threat to wildlife orientation.** Balmori, A. *Science of The Total Environment* 518-519: 58-60 (2015). <https://www.sciencedirect.com/science/article/abs/pii/S0048969715002296>
4. **Magnetoreception in birds: the effect of radio-frequency fields.** Wiltschko, R., et al. *Journey of the Royal Society Interface*. 12(103). (2015). <https://royalsocietypublishing.org/doi/pdf/10.1098/rsif.2014.1103>
5. **Electrosmog and species conservation.** Balmori, A. *Science of the Total Environment* 496: 314-316. (2014). <https://pubmed.ncbi.nlm.nih.gov/25089692/>
6. **Anthropogenic electromagnetic noise disrupts magnetic compass orientation in a migratory bird.** Engels, S., et al. *Nature* 509:353-356. (2014). <https://pubmed.ncbi.nlm.nih.gov/24805233/>
7. **Drosophila oogenesis as a bio-marker responding to EMF sources.** Margaritis, L, H., et al. *Electromagnetic Biology and Medicine* 33(3):165-189. (2014). <https://pubmed.ncbi.nlm.nih.gov/23915130/>
8. **A review of the ecological effects of radiofrequency electromagnetic fields (RF-EMF).** Cucurachi, C., et al. *Environment International* 51:116-140. (2013). <https://www.sciencedirect.com/science/article/pii/S0160412012002334>
9. **Ants can be used as bio-indicators to reveal biological effects of electromagnetic waves from some wireless apparatus.** Cammaerts, MC., et al. *Electromagnetic Biology and Medicine* 33(4):282-288. (2013). <https://pubmed.ncbi.nlm.nih.gov/23977878/>
10. **Exposure to cell phone radiations produces biochemical changes in worker honey bees.** Kumar, N., et al. *Toxicology International* 18(1):70-72. (2011). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3052591/>
11. **Mobile phone-induced honeybee worker piping.** Favre, D. et al. *Apidologie*. 42:270-279. (2011). <https://link.springer.com/content/pdf/10.1007/s13592-011-0016-x.pdf>
12. **Mobile phone mast effects on common frog (Rana temporaria) tadpoles: The City Turned into a Laboratory.** Balmori, A. *Electromagnetic Biology and Medicine* 29(1-12):31-35. (2010). <https://www.tandfonline.com/doi/abs/10.3109/15368371003685363>
13. **Changes in honeybee behaviour and biology under the influence of cellphone radiations.** Sharma, V. P., et al. *Current Science* 98(10):1376–1378. (2010). [http://www.stralingsarmvlaanderen.org/resources/Reports/Ved-Parkash-Sharma\\_a49823b5aa.pdf](http://www.stralingsarmvlaanderen.org/resources/Reports/Ved-Parkash-Sharma_a49823b5aa.pdf)
14. **Briefing Paper on the Need for Research into the Cumulative Impacts of Communication Towers on Migratory Birds and Other Wildlife in the United**

**States.** *Division of Migratory Bird Management (DMBM), U.S. Fish & Wildlife Service* (2009). <https://electromagnetichealth.org/pdf/CommTowerResearchNeedsPublicBriefing-2-409.pdf>

15. **Electromagnetic pollution from phone masts. Effects on wildlife.** Balmori, A. *Pathophysiology* 16(2-3):191-199. (2009).  
<https://www.sciencedirect.com/science/article/abs/pii/S0928468009000030?via%3Dihub>
16. **A possible effect of electromagnetic radiation from mobile phone base stations on the number of breeding house sparrows (*Passer domesticus*).** Everaert, J., et al. *Electromagnetic Biology and Medicine*. 26(1):63–72. (2007).  
<https://pubmed.ncbi.nlm.nih.gov/17454083/>
17. **Can Electromagnetic Exposure Cause a Change in Behaviour? Studying Possible Non-Thermal Influences on Honey Bees – An Approach within the Framework of Educational Informatics.** Harst, W., et al. *Acta Ststemica - IIAS International Journal*. 6(1):1-6. (2006). [http://www.next-up.org/pdf/ICRW\\_Kuhn\\_Landau\\_study.pdf](http://www.next-up.org/pdf/ICRW_Kuhn_Landau_study.pdf)
18. **Possible Effects of Electromagnetic Fields from Phone Masts on a Population of White Stork (*Ciconia ciconia*).** Balmori, A. *Electromagnetic Biology and Medicine* 24(2):109-119 (2005).  
<https://www.tandfonline.com/doi/abs/10.1080/15368370500205472>

## PLANTS

1. **Lessons learned from the application of machine learning to studies on plant response to radio-frequency.** Halgamuge MN, et al. *Environmental Research* 178(108634). (2019).  
<https://www.sciencedirect.com/science/article/abs/pii/S0013935119304311>
2. **Exposure to 2100 MHz electromagnetic field radiations induces reactive oxygen species generation in *Allium cepa* roots.** Shikha Chandel, et al. *Journal of Microscopy and Ultrastructure* 5(4):225-229. (2017).  
<https://www.sciencedirect.com/science/article/pii/S2213879X17300809>
3. **Weak radiofrequency radiation exposure from mobile phone radiation on plants.** Halgamuge, M.N. *Electromagnetic Biology and Medicine* 36(2):213-235. (2017).  
<https://pubmed.ncbi.nlm.nih.gov/27650031/>
4. **Exposure to 915 MHz radiation induces micronuclei in *Vicia faba* root tips.** Gustavino, B., et al. *Mutagenesis* 31(2):187-92. (2016).  
<https://pubmed.ncbi.nlm.nih.gov/26476436/>
5. **Electromagnetic Fields Act Similarly in Plants as in Animals: Probable Activation of Calcium Channels via Their Voltage Sensor.** Pall, M. *Current Chemical Biology* 10(1): 74-82. (2016). <https://www.eurekaselect.com/141390>

6. **Radiofrequency Radiation Injures Trees Around Mobile Phone Base Stations.** Waldmann-Selsam, C., et al. *Science of The Total Environment*. 572(1):554-569. (2016). <https://www.sciencedirect.com/science/article/abs/pii/S0048969716317375?via%3Dihub>
7. **Reduced growth of soybean seedlings after exposure to weak microwave radiation from GSM 900 mobile phone and base station.** Halgamuge, MN., et al. *Bio Electro Magnetism* 36(2):87-95. (2015). <https://onlinelibrary.wiley.com/doi/abs/10.1002/BEM.21890>
8. **Impacts of radio-frequency electromagnetic field (RF-EMF) from cell phone towers and wireless devices on biosystem and ecosystem? A review.** Sivani, S., et al. *Biology and Medicine* 4(4):202-216. (2012). [https://www.biolmedonline.com/Articles/Vol4\\_4\\_2012/Vol4\\_4\\_202-216\\_BM-8.pdf](https://www.biolmedonline.com/Articles/Vol4_4_2012/Vol4_4_202-216_BM-8.pdf)
9. **Adverse Influence of Radio Frequency Background on Trembling Aspen Seedlings.** Haggerty, K. *International Journal of Forestry Research* 2010:836278. (2010). <https://www.hindawi.com/journals/ijfr/2010/836278/>
10. **Microwave irradiation affects gene expression in plants.** Vian, A., et al. *Plant Signaling and Behavior*. 1(2):67–70. (2006). [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2633881/pdf/psb0102\\_0067.pdf](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2633881/pdf/psb0102_0067.pdf)
- 11.
12. **Tree Damage Caused By Mobile Phone Base Stations An Observation Guide.** Breuing, H. (2017). [https://kompetenzinitiative.com/wp-content/uploads/2019/08/2017\\_Observation\\_Guide\\_ENG\\_FINAL\\_RED.pdf](https://kompetenzinitiative.com/wp-content/uploads/2019/08/2017_Observation_Guide_ENG_FINAL_RED.pdf)

#### XIV. Reports, Articles & Reviews

1. **Risks to Health and Well-Being From Radio-Frequency Radiation Emitted by Cell Phones and Other Wireless Devices.** Miller, A., et al. *Frontiers in Public Health* 7(223). (2019). <https://www.frontiersin.org/articles/10.3389/fpubh.2019.00223/full>
2. **Commentary on The Utility of The National Toxicology Program Study on Cell Phone Radiofrequency Radiation Data for Assessing Human Health Risks Despite Unfounded Criticisms Aimed at Minimizing the Findings of Adverse Health Effects.** Melnick, R. *Environmental Research* 168:1-6. (2019). <https://www.sciencedirect.com/science/article/pii/S0013935118304973?via%3Dihub>
3. **Pathological Findings Observed in the Kidneys of Postnatal Male Rats Exposed to the 2100 MHz Electromagnetic Field.** Bedir, R., et al. *Archives of Medical Research* 49(7):432-440. (2018). <https://www.ncbi.nlm.nih.gov/pubmed/30600117>
4. **Mobile-Phone Radiation-Induced Perturbation of gene-Expression Profiling, Redox Equilibrium and Sporadic-Apoptosis Control in the Ovary of Drosophila**

- Melanogaster.** Manta, A., et al. *FLY* 11(2):75-95. (2017).  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5406167/>
5. **World Health Organization, Radiofrequency Radiation and Health – A Hard Nut to Crack (Review).** Hardell, L. *International Journal of Oncology* 51:405-413 (2017).  
<https://www.spandidos-publications.com/ijo/51/2/405>
  6. **Evaluation of the Protective Role of Vitamin C on the Metabolic and Enzymatic Activities of the Liver in the Male Rats After Exposure to 2.45 GHz of Wi-Fi Routers.** Shekoohi-Shooli, F., et al. *Journal of Biomedical Physics and Engineering* 6(3):157-164. (2016). <https://www.ncbi.nlm.nih.gov/pubmed/27853723?dopt=Abstract>
  7. **Bees, Birds and Mankind: Destroying Nature by ‘Electrosmog’.** Warnke, U. *Competence Initiative for the Protection of Humanity, Environment and Democracy* (2009). <https://www.bemri.org/publications/wildlife-and-plants/1-birds-bees-and-mankind/file.html>
  8. **Biological Effects of Amplitude-Modulated Radiofrequency Radiation.** Juutilainen, J., et al. *Scandinavian Journal of Work, the Environment and Health* 24(2):245-254 (1998). <https://www.ncbi.nlm.nih.gov/pubmed/9754855>
  - 9.
  10. **Effects of non-ionizing electromagnetic fields on flora and fauna, Part 1 Rising EMF levels in the environment** Levitt BB, Lai HC, Manville AM. *Rev Environ Health*, 2021 May 27. doi:10.1515/reveh-2021-0026
  11. <https://pubmed.ncbi.nlm.nih.gov/34047144/>
  - 12.
  13. **Effects of non-ionizing electromagnetic fields on flora and fauna, Part 2 impacts: how species interact with natural and man-made EMF.** Levitt BB, Lai HC, Manville AM. *Rev Environ Health*. 2021 Jul 8. doi: 10.1515/reveh-2021-0050.  
<https://pubmed.ncbi.nlm.nih.gov/34243228/>
  - 14.
  15. **Effects of non-ionizing electromagnetic fields on flora and fauna, Part 3. Exposure standards, public policy, laws and future directions.** Levitt, B & Lai, Henry & Manville, Albert . *Reviews on environmental health*. 10.1515/reveh-2021-0083.
  16. <https://www.researchgate.net/publication/354867978>

*The documents contained in this digest are the property of the copyright owners and are reprinted for educational purposes only.*

*Compilation prepared by Grassroots Environmental Education, Inc., 184 Main Street, Port Washington, New York 11050*



### C. David O. Carpenter, M.D.

I, David O. Carpenter, M.D., under penalty of perjury pursuant to 28 U.S.C. § 1746, hereby make the following declaration in support of a demand that the Federal Food and Drug Administration (FDA) and the Federal Communications Commission (FCC) acknowledge the proven evidence that radiofrequency electromagnetic fields (RF-EMFs) cause harm to humans at intensities that are not so strong as to cause tissue heating, and that current FCC human exposure guidelines are not based on a thorough scientific and health evaluation by the FDA.

I am a public health physician, educated at Harvard College and Harvard Medical School. My current title is Director of the Institute for Health and the Environment at the University at Albany, which is a Collaborating Center of the World Health Organization, and Professor of Environmental Health Sciences within the School of Public Health. Formerly, I was the Dean of the School of Public Health at the University of Albany and the Director of the Wadsworth Center for Laboratories and Research of the New York State Department of Health.

1. I served as the Executive Secretary to the New York State Powerlines Project in the 1980s, a program of research that showed children living in homes with elevated magnetic fields coming from powerlines suffered from an elevated risk of developing leukemia. After this I became the spokesperson on electromagnetic field (EMF) issues for the state during the time of my employment in the Department of Health. I have published several reviews on the subject and have edited two books.
2. I am a Co-Editor and a Contributing Author of the *BioInitiative: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF)*, [www.bioinitiative.org](http://www.bioinitiative.org). It documents bioeffects, adverse health effects and public health conclusions about impacts of non-ionizing radiation (electromagnetic fields including extremely-low frequency ELF-EMF and radiofrequency/microwave or RF-EMF fields). The public health chapter from this report was subsequently published in a peer reviewed journal.
3. Additionally, I am a Co-Author of *Setting Prudent Public Health Policy for Electromagnetic Field Exposures*, Reviews on Environmental Health, Volume 23, No 2, 2008, attached as Addendum A-2.
4. In addition, in 2009, I was invited to present to the President's Cancer Panel on the subject of powerline and radiofrequency fields and cancer, and have testified on this issue before the United States House of Representatives.
5. I am an active biomedical researcher, whose major interest is the study of environmental causes of human disease. I have over 460 peer-reviewed publications in the scientific literature, have edited six books and have numerous other publications and book chapters.
6. In sum, I am a public health physician, professor and former public health school Dean with expertise in neurobiology, low-frequency electromagnetic fields bioeffects, and radiofrequency (RF) and microwave (MW) radiation bioeffects and other disease caused by other environmental exposures..
7. Radiofrequency radiation (RFR) is used globally for communication, and is the basis for radio, television, cell phone, smart meters, Wi-Fi, GPS, and all other forms of wireless communication. While there are some natural sources of RFR, most human exposure is man-

made. The total exposure to the human population has increased markedly in the past decade with the advent of Wi-Fi in most homes and businesses, “smart” cities, “smart” utility meters, driverless automobiles, and especially with the global roll-out of the fifth generation (5G) RF, which operates at a higher frequency but has a shorter distance of propagation, requiring close placement of mini-cell towers in front of every 6<sup>th</sup> to 10<sup>th</sup> house in urban areas.

8. There is an enormous body of information which documents animal and human health hazards coming from excessive exposure to RF electromagnetic fields. In 2013 the International Agency for Research on Cancer rated RF EMFs as being “possible” human carcinogens based on human epidemiological studies. The major reason that the rating was not stronger was that there was inadequate evidence for cancer in animals. That has subsequently been changed as both the [US National Toxicology Program](#) (NTP) and the [Ramazzini Institute in Italy](#) have conclusively shown the development of cancer in rodents after exposure to cell phone intensities and lower cell tower intensities. In addition the NTP study showed DNA damage from cell phone frequencies and intensities.
9. In addition to cancer there is a large body of information showing that RF exposures have damaging effects of human sperm, and that excessive exposure alter neurobehavior. In addition there is growing evidence that some people respond to RF exposures, even at relatively low intensities, with development of a syndrome called electrical hypersensitivity (EHS), characterized by “brain fog”, headache, fatigue, tinnitus, photophobia and other relatively non-specific symptoms. The evidence supporting these statements are summarized in the [Bioinitiative Report](#) and the publication by [Belpomme et al.](#)
10. In spite of the overwhelming evidence for harm from RF EMFs the federal organizations responsible for protecting US citizens from harm from RF EMFs have not done so. They have based exposure standards on the false belief that RF EMFs are not harmful at intensities that do not cause tissue heating. These agencies ignore thousands of scientific publications demonstrating that that is not true. Because of the official responsibility of these federal agencies, states, local governments, medical professionals, school superintendents and the industry itself have not accepted nor acknowledged the dangers posed by excessive RF EMFs to the citizens of the US.
11. As a result of the failure of the FDA and the FCC to issue health protective exposure standards all residents of the US are exposed to intensities of RF EMF that are harmful to their health. This is most egregious among more vulnerable populations such as children, people with disabilities, minorities, pregnant women and the aged.
12. The cost to the health economy because of the failure of these federal agencies to issue health-protective guidelines is enormous, leading to hospitalization and death from cancer, demands made on infertility clinics, loss of productivity due to reduced cognitive potential, especially in children, and loss of productivity and well as the personal suffering of individuals who have EHS.
13. The FCC states that it does not have health expertise on its staff, and that it depends upon other federal agencies, particularly the FDA, for advice in setting standards. The FDA has failed totally in this regard. The FDA is the federal agency that supported the NTP study, but for reasons beyond comprehension they refuse to accept the results of that study, which conclusively proves that RF-EMFs cause cancer and DNA damage.

14. The immediate action that must be taken is that the FDA must acknowledge the evidence that RF-EMFs cause harmful biological effects after exposure at non-thermal intensities. This then must lead to a revision of the FCC guidelines which currently protect only from tissue heating, and thus do not protect against the development of cancer, infertility, neurobehavioral damage and EHS.
15. This acknowledgement by the FDA and the FCC that non-thermal intensities cause disease must then be reflected in a revision of the 1996 guidelines regulating exposures allowed to the human population coming from all sources of RF-EMFs.

Dated this 5<sup>th</sup> day of October, 2021.



DR. DAVID O. CARPENTER, M.D.

Director, Institute for Health and the Environment

University at Albany



#### **D. Jenny DeMarco and Mary Bauer — Virginians for Safe Technology**

**Purpose:** We submit this declaration to express our deep concern that state legislators, community leaders, and school administrators are relying on the misleading information and false claims made by the Federal Communications Commission (FCC) and the Food and Drug Administration (FDA) that their recommended guidelines for human exposure to non-ionizing radio frequency radiation (RFR) are *safe*. This reliance is resulting in the accelerated over-densification of RFR emitting communication technology being installed throughout the United States, especially near or within classrooms and on school grounds. These wireless installations include small cell Wireless Telecommunications Facilities (WTFs), over-the-air-reception-devices (OTARDs), Internet of Things (IoT), wireless digital devices, Wi-Fi wireless routers and networks and smart meters.

The FDA has no agency policy or process in place to validate claims of safety for any of these wireless technologies. The reliance of government and school officials on a flawed or non-existent FCC/FDA health and safety process creates a public health hazard and endangers the most vulnerable parts of our population, especially children. This is an urgent situation that needs to be immediately remedied by having the FDA, as a lead national health agency, adopt an official policy that is science-based and proven to be biologically safe.

**Organization:** Virginians for Safe Technology (VA4ST) is a non-partisan grassroots organization formed in 2020 to educate, inform, and advocate for Virginians and US consumers on the 5G+ roll-out and regulation of other wireless technologies we're using and exposed to everyday. VA4ST's mission is to protect current and future Virginians' rights to safe and responsible technology. VA4ST represents Virginians across the state, however, our organization's coalition network and efforts span more than 150 safe technology and health related groups across the United States, Canada, the UK, and other international countries. Through our work, VA4ST has become extremely concerned about the accelerated roll-out of wireless technology and its deep impact on the environment and health of the general population, especially our children.

#### **Background**

The FCC and the FDA are fostering a misconception that the FDA has a process and official policy to validate and ratify the current FCC thermal thresholds (also called the Maximum Permissible Exposure limit or MPE limit) for non-ionizing RFR as safe when, in fact, the FDA has no such policy or process in place. By providing this misleading information and promoting these false claims, there is now an imminent health hazard to the public, and specifically to children.

5G+ WTF technologies have been deemed “safe” by the FCC, when in fact **no safety testing** of this technology by the FDA has ever been sponsored or certified as safe to validate its position. Instead, the FCC issued Order 18-133 on September 27, 2018<sup>83</sup> to accelerate the 5G+ wireless deployments putting Virginians at unnecessary risk, especially in the school system. The reliance by our state legislators, school administrators, and local community leaders on these

---

<sup>83</sup> [FCC-18-133A1.pdf](#)

misconceptions and false claims perpetrated by the FCC and FDA is leaving Virginians and other members of the public unprotected and vulnerable to suffering harm due to excessive RFR exposure. RFR was classified as a Group 2B possible human carcinogen by the World Health Organization's International Agency for Research on Cancer (IARC ) in 2011.<sup>84,85</sup> According to IARC, "the average exposure from use of the same mobile phone is higher by a factor of two in a child's brain and higher by a factor of 10 in the bone marrow of the skull."<sup>86</sup>

This declaration contends that the FDA and FCC's process is flawed and needs to be remedied by having the FDA adopt a policy for determining RFR Maximum Permissible Exposure (MPE) limits that are actually safe.

### **The FCC/FDA's Flawed Process**

The FCC is not a health agency and does not have the medical competency to make health and safety assessments or decisions, and therefore defers to the FDA. The FDA's duty is to look for potential health impacts from exposure to the existing and evolving wireless technology. For example, the FDA had a responsibility to test millimeter wave frequencies (above 30 GHz) and phased array antennas intended to be a part of the 5G+ infrastructure build-out. The FCC had full knowledge the FDA did not do any of this type of 5G+ testing. The FDA also did not advise the FCC to lower the MPE to the precautionary level as part of employing the precautionary principle.

The FCC's detrimental reliance on the misleading information provided by the FDA resulted in a decision not to lower the thermal thresholds. The FDA has created a misconception that non-ionizing RFR is "safe" without using science-based reasoning to reach this conclusion. Therefore, the FCC's decision-making process for their safety guideline reviews and updates are inherently flawed and makes the thermal thresholds the FDA has provided appear arbitrary.

### **An Imminent Hazard for School Children**

One of the fallouts of these false claims made by the FDA is that they are creating an imminent health hazard for children in Virginia schools by permitting an unlimited amount of Wi-Fi emissions, a possible Group 2B carcinogen, to radiate children in their classrooms all day without advising school officials or parents of the associated risks. The Virginia Department of Education (VDOE) administration needs instruction, training, and viable protocols to immediately implement to mitigate and reduce RFR exposures in the schools. This guidance is urgently needed so VDOE can make classrooms a healthier learning environment for the children. VDOE has a duty of care to physically protect children while they are attending school.

According to a Chief Technology Officer in a Virginia school district, their average classrooms have 25-35 students, and each child is issued a wireless digital device starting in 3<sup>rd</sup> grade. The aggregate radiation from 25-35 students working close proximity may easily exceed FCC limits, but since the FDA has created the impression that all non-thermal radiation is safe, no schools

---

<sup>84</sup> [https://www.iarc.who.int/wp-content/uploads/2018/07/pr208\\_E.pdf](https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf)

<sup>85</sup> <https://monographs.iarc.who.int/agents-classified-by-the-iarc>

<sup>86</sup> <https://ehtrust.org/science/whoiarc-position-on-wireless-and-health>

are measuring, or attempting to reduce, the levels of wireless radiation in their classrooms. This situation is exacerbated by the fact that each student may also have a cell phone, and iPads, smart watches, Smart Boards, routers and access points all add to the total radiation level.

Guidelines created by the VDOE and the Virginia Department of Health (VDH) on best practices for using digital devices in schools<sup>87</sup> fail to even mention the potential health hazard posed to children by exposure to RF radiation. The health professionals within these state agencies are following the lead of the FDA, tragically assuming that the federal agency has fully vetted the science, engaged in a serious investigation of the issue, and concluded there is no risk, as it indicates on its website. That is false. Because the VDH relies on federal recognition of a health safety issue, the VDOE felt they were at liberty to completely omit RF safety measures from their statewide guidelines.

The further result of the FDA's misleading statements is that millions of school children in Virginia will now be exposed to this potential hazard at a critical window of their development. The impact in the short term could be acute chronic bio-effects such as hyperactivity, nose bleeds, headaches and concentration issues; however, the long term effects such as impaired neurological function, reproductive problems or even cancer would not be evident for years.<sup>88</sup>

This current amount of excessive RF exposure is making students less able to concentrate during their school day, amongst suffering other bioeffects that school nurses are not trained to recognize. As a result, school nurses may never associate a child's sudden complaint of bioeffect symptoms to RFR or radiation sickness, which hinders the ability to mitigate potential harms to the children.

Mitigation of radiation in classrooms is not difficult. Some typical RF mitigation measures for classrooms include reducing effective radiated power from routers, reducing beacon frequency, hard-wiring devices and routers, keeping cell phones in airplane mode in designated locker areas during the school day, and limiting the use of the other wireless digital devices by teachers and students. But these measures are not being taken because of FDA inaction.

It's impossible to make a safe learning environment in the school system without the FDA acknowledging the serious potential harm to students from RFR. Lacking a science based public health policy continues to permit this health hazard to be ignored, thereby recklessly endangering children at school. While the FDA's public health policy is being revised, we feel it is the FCC and FDA's urgent responsibility to immediately publish medical disclaimers warning that the official thermal threshold is not necessarily considered safe and that RF mitigations should be strongly advised to reduce RFR as much as possible. This disclaimer should also cite the current thermal standard cannot be relied upon by school administrators and medical personnel for school policy or medical diagnosis decisions, respectively.

Our Virginia legislators believe that they only have a duty to protect the public against thermal hazards, based on the FCC's fostered misconception of what is considered safe and the lack of

---

<sup>87</sup> [https://www.doe.virginia.gov/instruction/virtual\\_learning/digital-devices-guidelines.docx](https://www.doe.virginia.gov/instruction/virtual_learning/digital-devices-guidelines.docx)

<sup>88</sup> <https://bioinitiative.org/conclusions>, *Evidence that children are more vulnerable.*

any health-based standards promulgated by the FDA. The decision of the FCC not to lower the MPE to protect against bioeffects occurring below the thermal threshold – in which the FCC implied that the decision was supported by the FDA - is clearly endangering our children. Lower threshold guidelines are specifically needed to protect the smaller bodies of children who have *“smaller body mass and rapid physical development, both of which magnify their vulnerability to known carcinogens, including radiation.”*<sup>89</sup>

### **RFR harms occurring from towers placed on school property and federal funding of wireless technology**

Counties across the state of Virginia are receiving significant rental fees for the installation of macro towers and WTFs on school rooftops and/or school properties. In just one example, the Chesterfield County school district received more than one million dollars of rental income from the telecom providers in one year.<sup>90</sup> The state also appropriates various funding streams to robustly encourage installation of wireless broadband and Wi-Fi routers, which are in closer proximity to the children's bodies, instead of wired cable connections inside the classrooms. These types of financial sponsorships, one governmental and the other from private industry, are gladly accepted by school administrators to meet the gap in their budgets without any consideration of whether they are endangering the children's physical and mental safety.

Chesterfield County also received nearly four million dollars from the CRRSA (Coronavirus Response and Relief Supplemental Appropriations Act) technology grant.<sup>91</sup> \$2.254 Million of that was used mainly to purchase wireless computers and another \$540,000 was appropriated for other digital learning technology for their students within the county.<sup>92</sup> Nowhere in the CRRSA grant money budget appropriation for school districts is there any money assigned for RF mitigation measures to reduce the students' exposures to non-ionizing radiation.

The reason Virginia schools are making the decision to spend the CRRSA grant money without any regard for RFR mitigations, such as hardwiring broadband, is due to the lack of public health policy by the FCC/FDA. This is resulting in the notion that children are safe during the school day around unlimited Wi-Fi connections, access nodes, and wireless routers in school classrooms as well as macro towers and OTARDs on school property.

County school administrators are relying on the misleading information and false claims made by the FCC and FDA that their recommended guidelines for thermal thresholds per 47 *CFR 1.1310* are deemed as safe. In turn, the school administration and VDOE are led to believe they have no duty of care to protect children from the irreversible biological harm that can occur from RFR below the thermal threshold.

### **Ultra-hazardous "smart" city design in relationship to schools and children**

---

<sup>89</sup> <https://bioinitiative.org/conclusions>, *Evidence that children are more vulnerable*

<sup>90</sup> <https://virginiansforsafetech.org/wp-content/uploads/2021/10/FOIA-1million.pdf>

<sup>91</sup> <https://www2.ed.gov/about/offices/list/opecrrsaa.html>

<sup>92</sup> <https://virginiansforsafetech.org/wp-content/uploads/2021/10/money-va4st.pdf>, <https://virginiansforsafetech.org/wp-content/uploads/2021/10/esser-0001.pdf>

Virginia is positioning itself to become a national leader in smart city technology design.<sup>93</sup> It appears boundless NGO 5G+ wireless innovation and an FCC deregulation agenda are considered the *avant garde* recipe to excel and compete economically in Virginia for smart city innovation; but what happens to all these Virginia policies and programs if RFR below the thermal threshold is found to be unsafe? The FCC is known to be captured by the telecom industry<sup>94</sup> and continues to willfully and knowingly encourage rapid deployment of wireless infrastructure, despite the mounting evidence that it is causing significant harm to children.<sup>95</sup>

With respect to the recent court decision ordering the FCC to re-examine its human safety guidelines in the light of new science, lead plaintiff Environmental Health Trust commented, "The landmark case centers around the FCC's decision not to update its 1996 exposure limits for wireless radiation from cell phones, cell towers, and wireless devices. Environmental Health Trust experts have long argued that the FCC's outdated limits place Americans everywhere at risk, especially in the era of 5G."<sup>96</sup>

This harm is additionally compounded by the telecoms' new OTARD pre-emption rule which is being forced onto communities across the United States. The new FCC rule takes over the municipal local siting authority for OTARD wireless antennas, which does not offer opt-outs or require public notice or neighbors' consent. Allowing placement of OTARDs on the top of school buildings will worsen the already harmful level of RFR exposure to children.

Smart cities are predicated on growing innovative impact markets using unlimited wireless and Wi-Fi capabilities like educational technology (EdTech) in schools. In addition to excessive RFR exposure, EdTech will exploit information markets to expand the IoT build-out making schools part of a wireless mesh network. This is all at the expense of children's safety while they are using school-issued wireless devices.

Smart city designs are marketed as inherently safe. This misconception fostered by the FCC/FDA becomes a contagion for government officials at every level to accept and promote widespread 5G+ installations to launch further innovation. With decision makers regarding the FCC power density thermal threshold as safe, there is no limit as to how many towers, sensors and wireless nodes they will allow. Instead of government agencies proceeding with caution based on the mounting evidence of wireless harm, they're still permitting smart city NGOs to financially capitalize off of the misleading information and false claims made by FCC/FDA with complete disregard of remedy or recourse to protect the children.

### **A Disclaimer Is Required**

The Virginia Department of Health is leading schools, municipalities, and their respective medical advisors to believe the FCC/FDA official thermal standard is safe, science-based, and can be relied upon by physicians in providing medical advice. VA4ST's position is that the

---

<sup>93</sup> [www.cit.org](http://www.cit.org)

<sup>94</sup> [https://ethics.harvard.edu/files/center-for-ethics/files/capturedagency\\_alster.pdf](https://ethics.harvard.edu/files/center-for-ethics/files/capturedagency_alster.pdf)

<sup>95</sup> <https://ehtrust.org/eh-takes-the-fcc-to-court>

<sup>96</sup> [20-1025-1910111.pdf \(uscourts.gov\)](https://www.uscourts.gov/20-1025-1910111.pdf), *EHT/CHD v. FCC No. 20-1025 consolidated with 20-1138*, DC Circuit Court of Appeals, decided August 13, 2021

FCC/FDA should consider the issuance of an official disclaimer to advise against such reliance in order to protect public health. This disclaimer would alert medical professionals inside schools and work places to provide some level of protection while the FCC guidelines are under review.

The official disclaimer should also encourage applying the ALARA (As Low As Reasonably Achievable) precautionary principle for RFR risk mitigation. Collaborative for High Performance Schools (CHPS), which focuses on changing the design of schools to maximize the health of students, educators, and staff<sup>97</sup>, states, "In order to reduce the potential for adverse effects due to these exposures, it is important in school environments with children to apply the precautionary principle ALARA by providing low-EMF classrooms, specifying low-EMF IT equipment and wired Internet access network technology, and establishing low-EMF user practices."<sup>98</sup> Without RFR mitigation, common bioeffects experienced in the classroom include headaches, dizziness, nausea, loss of concentration, skin burning, nosebleeds, heart palpitations, arrhythmia, blurry vision, cancer, loss of capacity to work or socialize and many more.<sup>99,100,101</sup>

### **Remedies for School Children**

When a new FDA policy for a revised thermal threshold is implemented, the school administrators will be able to rely on the FCC and FDA's recommended guidelines in good faith.

In the meantime, four interim remedies for relief are recommended to protect the children:

- 1) The FCC and FDA immediately publish medical disclaimers warning that the official thermal threshold is not necessarily considered safe and should not be relied upon;
- 2) Implement more protective policies to mitigate and reduce RFR exposures according to the ALARA precautionary principle for schools and buildings;
- 3) Initiate protocols to monitor cumulative power densities in schools and residential neighborhoods by conducting municipal RF surveys and using RF mitigation methods to reduce power levels to the minimum necessary to carry out the desired communication per 47 USC 324;
- 4) Prepare an RF risk assessment for Virginia addressing what happens to state policies, programs, and smart city design if the current RFR thermal threshold is found to be unsafe by the FDA. The discontinuance of siting cell or broadband towers on school property should be scrutinized in the risk assessment in order to remove this ultra hazardous harm to children, avoid children's cancer clusters in schools, and establish low-EMF user practices for wireless devices.

The urgent problem of endangering public safety needs to be remedied immediately. It is VA4ST's position that there needs to be a new MPE limit that is significantly lower to be more

---

<sup>97</sup> <https://chps.net/>

<sup>98</sup> [US-CHPS Criteria 2014 2016 update\\_170706.pdf, Low EMF Criteria, pp. 108-114, Sections EQ 15.1-15.2](#)

<sup>99</sup> <https://ehtrust.org/?s=Wi-Fi>

<sup>100</sup> <https://ehtrust.org/episode-13-citizen-testimony-of-5g-effects-and-wi-fi-in-schools>

<sup>101</sup> <https://youtu.be/kmcAXZ-o1K4>

protective against health bioeffects as cited in the Bioinitiative Report.<sup>102</sup> In order to do this, new rule making must be created within the FDA, which ensures there is a system of checks and balances between them and the FCC to guarantee accurate science-based conclusory decisions are made. It is only when this happens that the FCC will actually be fulfilling its mission for which it was created, to promote the “safety of life and property” *per 47 USC 151*.<sup>103</sup>

## Conclusion

In 2019, the FCC should have had good cause to lower the MPE limits for the RFR emissions from wireless infrastructure *per 47 CFR 1.1310*. This assertion is based on the FCC public comment record created in response to their Notice of Inquiry on this topic and numerous public appeals from individuals and private organizations. Consumers, employers, community leaders, schools and parents relied on the FCC to update wireless safety guidelines when necessary and expected this would happen prior to the deployment of the 5G+ infrastructure.

The three areas negatively effecting children right now due to the refusal of FCC/FDA to revise the MPE and their far reaching propagation of misleading information are:

- 1) Legislators deeming unlimited amounts of RFR in the classroom as safe, erroneously dismissing RFR bioeffects from the health and safety guidelines for wireless digital devices mandated via HB 817;
- 2) RFR from cell towers on rooftops and school property, and lack of classroom RF mitigation from all wireless devices; and
- 3) The ultra-hazardous smart city designs that further compound the children’s RFR exposures through connecting the school to an IoT mesh, installing OTARDS, and permitting unlimited amounts of wireless radiation, which is a possible Group 2B carcinogen.

All of these harms are permitted to accumulate on school property making it impossible for the children to have a healthy learning environment.

The FDA fostered the misconception that it had a federal policy used in their decision-making process. The FCC also did not question, nor did it think it had a duty to question, the veracity of how the FDA reached its conclusions. The FCC’s process is flawed and fails to protect consumers from the unnecessary biological harms, and the unrevised MPE provided by the FDA for the 5G+ technology platform is creating grave danger to the public, and an imminent hazard to our children. Until the revised MPE is established, the four VA4ST recommended remedies should be implemented immediately to intervene on behalf of the children.

We declare under penalty of perjury that the foregoing is true and correct, to our best knowledge.

*/s/Jenny DeMarco*

---

<sup>102</sup> <https://bioinitiative.org/table-of-contents/>

<sup>103</sup> <https://www.govinfo.gov/content/pkg/USCODE-2015-title47/pdf/USCODE-2015-title47-chap5-subchapI-sec151.pdf>

Jenny DeMarco

*/s/Mary Bauer*

Mary Bauer

Virginians for Safe Technology, LLC

43 Town & Country Drive

Suite 119 #125

Fredericksburg, VA 22405

[virginiansforsafetech@protonmail.com](mailto:virginiansforsafetech@protonmail.com)

[www.virginiansforsafetech.org](http://www.virginiansforsafetech.org)



## E. Consumers for Safe Cell Phones — Cynthia Franklin

I, Cynthia Franklin, hereby state, under penalty of perjury, that the following information is true to my knowledge, information, and belief:

I am the President of Consumers for Safe Cell Phones (“CSCP”), a 501(c)(3) non-profit organization. As the group’s name suggests, CSCP educates consumers as to ways to reduce microwave radio frequency radiation (RFR) exposure from cell phones, tablets, WIFI routers and other wireless devices. CSCP’s work centers on the fact that cell phones and associated cellular infrastructure emit non-ionizing RFR that has been shown by thousands of peer-reviewed studies to pose biological risks, including cancer, at or below the FCC’s exposure limits.

CSCP has approximately 5,800 social media followers who regularly receive information and advice from CSCP. The group also communicates with the public through webinars and online informational articles. CSCP provides updated information to its followers on, among other matters, the science and research being conducted on RFR and potential biological impacts. In offering these services, CSCP does not have the resources to conduct its own scientific studies, but instead reviews information from publicly available sources, including the FDA.

One issue CSCP is focused on is the federal regulatory RFR exposure compliance testing procedures for approving the marketing and sale of cell phones. Cell phone manufacturers are not required to test their products directly against the body even though it is well known that consumers regularly wear and use their cell phones in shirt and pants pockets and bras.

In 2012, the U.S. Government Accountability Office (GAO) published the report, **GAO-12771** “Telecommunications: Exposure and Testing Requirements for Mobile Phones Should Be

Reassessed” in which it was concluded that:

*“By not formally reassessing its current limit, FCC cannot ensure it is using a limit that reflects the latest research on RF energy exposure. FCC has also not reassessed its testing requirements to ensure that they identify the maximum RF energy exposure a user could experience. **Some consumers may use mobile phones against the body, which FCC does not currently test, and could result in RF energy exposure higher than the FCC limit.**”*

Cell phone manufacturers are substantially underestimating actual RFR exposure levels when demonstrating compliance with the FCC’s RFR exposure limits. The 2012 GAO report states that federal testing procedures for wireless devices allow consumers to be exposed to RFR levels “higher than the FCC limit.”

The FDA claims on its website that it provides guidance to “federal agencies on techniques and programs for testing and evaluating electronic product radiation”<sup>104</sup>

*“Under the law, the FDA is responsible for, among other things: Consulting with other federal agencies on techniques and programs for testing and evaluating electronic product radiation. For example, the FDA provides scientific input and expertise to the Federal Communications*

---

104 <https://www.fda.gov/radiation-emitting-products/home-business-and-entertainment-products/cell-phones>

*Commission (FCC). The FCC sets limits on the emissions of radio frequency energy by cell phones and similar wireless products.”*

On August 13, 2021, the DC Circuit Court of Appeals in its ruling in *Environmental Health Trust v The Federal Communications Commission (EHT v FCC)* found:

*“..the Commission’s [December 4<sup>th</sup>, 2019] order arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission’s current [thermal] limits may cause negative health effects unrelated to cancer....**That failure undermines the Commission’s conclusions regarding the adequacy of its testing procedures, particularly as they relate to children.**”*

An even more alarming statement from the EHT v FCC ruling is that “***the factual premise - the non-existence of non-thermal biological effects — underlying the current RF guidelines may no longer be accurate.***”

Thousands of studies (and even more have been published since the body of evidence submitted into the record in EHT v FCC) have documented serious biological harm from exposure to levels of RFR far below those that could possibly be powerful enough to cause heating of tissue. This means that the current FCC testing guidelines, based solely upon protection from heating, are thousands, possibly even hundreds of thousands of times more lenient than limits that would be necessary to protect the public from non-thermal exposures.

As the Court found in EHT v FCC, the FCC’s 25 year old exposure limits are based upon an outdated assumption that the only harm from RFR is that of heating – and the implications of this regulatory failure are a major public health threat, “***particularly as they relate for children.***”

It is unclear why the FDA believes that the current RFR limits, which were adopted almost 25 years ago, still protect us even though patterns of use and the newer, more biologically harmful pulsed RFR exposures have changed significantly since 1996, with the amount of radiation we are exposed to on a daily basis increasing substantially.

The FDA has left all of us in the dark on how and why it decided that current research on biological risks from “non thermal” levels of RFR exposure does not warrant a change in federal RFR standards or cellphone testing procedures. The FDA has ignored all the scientific research documenting biological harm at low exposure levels far below those “heating-only” exposure limits currently being used by FCC in their testing protocols.

With seemingly little concern for the health and safety of the public, the FDA presents confusing and conflicting advice on its website and in public statements, assuring everyone that cell phones are safe even if used directly against the body while receiving RFR levels in excess of the FCC’s limits....***even with unlimited use by children and pregnant women.***

This absolute regulatory failure by the FDA means that CSCP now has to divert resources toward efforts to counter the disinformation being disseminated by the FDA website, as well as from biased and unfounded opinion reports and misleading public statements issued by Jeffrey Shuren, director of FDA’s Center for Devices and Radiological Health.

This means CSCP is not able to supplement the information that it provides to its followers with what should be the most comprehensive assessment of RFR scientific research to date by the FDA, the agency charged with protecting the public from RFR exposures.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 12, 2021

*Cynthia Franklin*

Cynthia Franklin, President

Consumers for Safe Cell Phones

829 Briar Rd

Bellingham, WA 98225



**F. Camilla Rees**

o. 415-992-5093

crgr@aol.com

*Declaration in Support of the Petition for Rulemaking to the Secretary of the U.S. Department of Health and Human Services (HHS) by Americans for Responsible Technology (ART) et al. under the Imminent Hazard Rules Requesting an Immediate Clarification of FDA Official Policy on RFR Safety.*

November 16, 2021

My name is Camilla R. G. Rees and I reside at 32 Water Street, Stonington, CT 06378.

I have been significantly injured in four different settings from exposures to wireless radiation (RFR), twice in residential settings and twice in office environments, and mildly impacted in several other situations. It is because of these experiences that I have come to be a researcher, educator and consultant on the biological and health risks of wireless technologies, and an advocate for safer, technologically superior, hard-wired Internet access via fiber or cable. These experiences are also the reason why today I live in a low-density, non-urban, non-commercial environment to avoid the acute, chronic and cumulative effects of 24/7 Radio Frequency Radiation (RFR).

I conduct my work through the National Institute for Science, Law and Public Policy (NISLAPP) in Washington, D.C., where as a Senior Policy Advisor I have led its EMF Education and Advocacy Project for over a decade. In collaboration with many other pioneers in this field of education and advocacy, I have sought to raise awareness of the risks and alternatives to wireless technology. At NISLAPP, we have initiated, directed and overseen policy papers on electromagnetic fields, the smart grid and telecommunications, including the landmark papers, "[\*Getting Smarter About the Smart Grid\*](#)" and "[\*Re-Inventing Wires: The Future of Landlines and Networks\*](#)". "[\*Re-Inventing Wires\*](#)" explains, from technological and other perspectives, why hard-wired, fiber optics to the premises (FTTP) is superior to wireless Internet access networks, and "antenna densification", and is clearly the safer alternative to 5G.

NISLAPP has organized dozens of programs on this subject around the country, including pioneering early programs on wireless risks to children, fiber alternatives to wireless, on the benefits of hard-wired utility meters over wireless, and on tech overuse and addiction, as well as presenting five programs featuring international experts on RFR risk at the largest public affairs forum in the U.S., the Commonwealth Club of California. Also, I authored "[\*The Wireless Elephant in the Room\*](#)" and co-authored, with Dr. Magda Havas of Trent University, Canada, "[\*Public Health SOS: The Shadow Side of the Wireless Revolution\*](#)".

For thirteen years, I have conducted in-depth interviews with leading international scientists on the biological and health risks of electromagnetic fields; was co-author of a [\*published paper\*](#) on wireless radiation's impact on the heart; and have created websites for the public, [ElectromagneticHealth.org](http://ElectromagneticHealth.org) and [\*Manhattan Neighbors for Safer Telecommunications\*](#), as

well as a Facebook group aimed at parents, teachers and school administrators, focused on RFR risks to children, [Campaign for Radiation Free Schools](#). We have also produced hundreds of videos featuring EMF experts, now circulating in 163 countries, including the [International EMF Scientist Appeal to the United Nations](#) (2015). I have been a long-time source for the media, and a source of support for new activist groups, physicians, major online consumer health newsletters, government officials, schools, employers, lawyers, and for scientists themselves, since 2008. I also serve on the Advisory Board of the [Building Biology Institute](#), a leading educator of architects, builders and environmental consultants on environmental risks.

At the core of all of my work has been explaining: **1)** the inadequacy of the FCC's RFR thermal-only exposure guidelines to protect public health; **2)** that there has been no pre-market safety testing, or post-market surveillance, of health effects of wireless technologies and infrastructure; and **3)** that our government, including the FCC and FDA, has turned a blind eye to well-established RFR risks, and enabled harmful, RFR-emitting technologies to become pervasive throughout our lives, fueling growth of a trillion dollar, and now extremely powerful, industry that is making people sick.

In 2018, I was awarded the American Academy of Environmental Medicine's most prestigious award for outstanding contribution to Environmental Medicine, the [Jonathan Forman Award](#), and the "2018 Public Health Award" from the Global Foundation for Integrative Medicines.



Most recently, in collaboration with the New York 501(c)(3), Wired Broadband, Inc., and other groups, NISLAPP and Manhattan Neighbors for Safer Telecommunications are [opposing the 'Jumbo 5G Antennas'](#) being proposed for several neighborhoods in New York City. Massive radiating antennas (see photo at left) are being proposed for residential city streets, concentrated initially in 10 disadvantaged neighborhoods, and are being justified by the misleading claim that these antennas will close the 'digital divide' (which they will not).

Publicly available material on the proposed 'Jumbo' 5G antennas indicate there will be no more than one Jumbo 5G Antenna per block in these neighborhoods, but the materials also say any limitation (such as this) may be reversed by the New York City Commissioner in her sole discretion. No detail has to date been provided about the power, frequencies, and other technical specifications of the 'Jumbo' antennas, except drawings showing that each pole will contain not one, but many radiating antennas on multiple tiers (see drawing on the right). Each antenna within the structure would, alone, pose a serious health risk to those nearby. There is no provision we know of for monitoring the RF emissions of these Jumbo 5G Antenna arrays, or for determining whether the aggregate exposures of the initial 4,000 antenna arrays planned for these disadvantaged neighborhoods would be in compliance with FCC guidelines. The proposed antennas present enormous health and environmental risks to New York City residents. It is frankly egregious that they are being clustered in disadvantaged areas, leading to



the possibility these communities are being used as guinea pigs to test for the likely harms these new giant-sized antennas will cause to nearby residents.

As we often find, it appears City officials have been misled into believing FCC exposure guidelines are protective, and have also been told that the FCC exposure guidelines have the support of the FDA, despite the fact that the FDA does not formally evaluate RF-emitting telecom devices and infrastructure, like they do with medical devices. Repeatedly, government officials across the country, as well as employers, schools, churches and property owners, are believing these false claims, and thus ignorantly jeopardizing people's health from small and macro towers on their premises, when safer Internet access options exist and could have been chosen over the wireless options.

Local officials are being told new 5G antennas are 'faster' than older wireless antennas, but not told about the safer, higher performance, and far superior, hard-wired technology option, Fiber to the Premises (FTTP). Fiber to the premises will always be faster than any generation of wireless, as wireless communications is a shared medium used by many on-line users at once. This critical fact is not mentioned by champions of wireless in the interest of selling communities on an inferior technology that will rapidly become obsolete. Wireless is not enduring technology, like fiber, which is paid for once and that former FCC Chairman, Tom Wheeler calls ['future-proof'](#).

Local officials have likely also not been told about the full range of advantages fiber offers over wireless, beyond speed, each one of which is a compelling reason on its own to choose fiber over wireless. See chart below about the advantages of fiber over wireless.

<b>'Fiber To The Premises' - Advantages Over Wireless</b>	
<ul style="list-style-type: none"><li>• faster transmission speed</li><li>• reliability of Internet access</li><li>• neighborhood aesthetics</li><li>• national cybersecurity</li><li>• preserves human health from ambient radiation</li><li>• neutrality of internet access</li><li>• digital equity</li><li>• personal privacy</li><li>• protects the biological ecosystem</li><li>• safety &amp; fire prevention</li><li>• resiliency in extreme weather events</li><li>• reduces climate impacts from this sector</li></ul>	<ul style="list-style-type: none"><li>• supports equality in high-speed internet access</li><li>• lowers energy usage and improves energy efficiency</li><li>• supports health in patients with chronic illnesses</li><li>• preserves hard-earned equity in peoples' homes</li><li>• quality of voice communications</li><li>• supports physical and cognitive health in the elderly</li><li>• supports children's health</li><li>• makes enduring tech choices not prone to rapid and costly obsolescence</li><li>• preserves the sanctity of neighborhoods with revered churches, temples, mosques, and landmark and historic buildings</li><li>• protects parks as a place of biological peace and refuge</li><li>• value for the money for all users</li></ul>

Without sharing the truth about the full range of Internet access options, the deception about both the adequacy of wireless to meet growing needs, and the inadequacy of regulatory oversight, American communities, businesses and individuals have been duped into believing an inferior technology is superior, and that wireless radiation does not present health risks, when nothing could be further than the truth.

Worth mentioning is the history of the [LinkNYC](#) free wireless access program in New York City, now expanding into the Link5G program with the 'Jumbo' antennas in the photo above. Originally, the LinkNYC business model was expected to rely solely on advertising. That

business model failed, as evidently there were insufficient advertisers wanting to advertise on the RFR-radiating kiosks being placed around the City. By 2019, LinkNYC faced bankruptcy. Then in 2021, the City introduced a "mixed financial model" comprised of "advertising and 5G cellular services revenue" so that the expansion of the LinkNYC wireless network throughout the city could become viable. Since LinkNYC's mission is to offer free wireless access, it appears the wireless companies are underwriting part of the cost of the NYC wireless network, a compromised position for the City. The City is essentially in a long-term partnership with the telecom industry enabling widespread, harmful RFR radiation to blanket peoples' lives, all while the adequacy of the FCC safety guidelines have long been called into question.

It is telling to look back to an early U.S. government funded meta-study on RFR effects published by the U.S. Naval Medical Research Institute in 1971, by Zorach Glaser, PhD, [“Reported Biological Phenomena \(Effects\) and Clinical Manifestations Attributed to Microwave and Radio-Frequency Radiation”](#). In this review of global scientific studies on the effects of RFR--a half a century ago--Dr. Glaser found 2,308 studies that linked RFR and other forms of EMF with 132 different biological effects, symptoms and diseases, including:

- |                                    |  |
|------------------------------------|--|
| • Central Nervous System Effects   | • Blood Disorders                      |
| • Autonomic Nervous System Effects | • Enzyme and other Biochemical Changes |
| • Genetic and Chromosomal Changes  | • Metabolic Disorders                  |
| • Psychological Disorders          | • Endocrine Gland Changes              |
| • Vascular Disorders               | • Changes in Physiological Function    |

Thirty six years later, a 1,540-page meta-study, published in 2007, updated in 2012, co-authored by a group of 29 international scientists, the [BioInitiative Report](#), cited more than 1,800 scientific studies that associate low-intensity, non-thermal radiation exposures from wireless technologies and other sources of electromagnetic radiation (EMR) with dozens of diseases and biological effects in humans, including:

- |                              |  |                                    |                                |
|------------------------------|--|------------------------------------|--------------------------------|
| • Neurological Effects       | • Stress Response                        | • Breast Cancer Promotion          | • Childhood Cancers (leukemia) |
| • Oxidative Damage           | • Brain Cancer                           | • Biochemical Imbalances           | • Genotoxic Effects            |
| • Effects on Immune Function | • Acoustic Neuromas & Other Brain Tumors | • Fertility & Reproductive Effects | • Fetal & Neonatal Effects     |
|                              | • Blood Brain Barrier Damage             |                                    |                                |

These are just two examples of meta reviews of the scientific literature, but there are many additional meta reviews, as well as decades of published studies showing risks from RFR. These include rigorous studies documenting RFR effects conducted by the U.S. Government.

A recent monograph, ["The Largest Unethical Medical Experiment In Human History"](#) (2020) by Ronald N. Kostoff, Research Affiliate, School of Public Policy, Georgia Institute of

Technology, identifies a wide spectrum of adverse effects of wireless radiation as reported in the premier biomedical literature over seven decades.

In the case of the Jumbo 5G antennas being proposed for New York City, it is unacceptable that the truth about the technological choices, and their advantages and risks, is not being transparently presented to City officials. Very dangerous wireless densification is being carried out and further planned under the banner of 'closing the digital divide' by officials who have made poor decisions. Poor decisions have been made as a result of having been misled about the adequacy of the FCC RFR exposure guidelines--misled by the FCC, the FDA, and the telecommunications industry itself wanting to sell its products and services.

Over time, many individuals and groups have attempted to encourage government officials to focus on wireless radiation risks, but a blind eye has been turned to the topic by politicians, many of whom accept contributions from the telecom industry. Meanwhile, since 1990, millions of U.S. citizens having been harmed by this radiation, and are increasingly being harmed, with more and more radiating devices and infrastructure continually going up all around. Overall health in the U.S. has substantially declined since 1990 and there has been a dramatic, yet underrecognized, rise in chronic disease. Acute symptoms from wireless exposures, like sleep issues, mood swings, irritability, joint pain, brain fog, memory issues and poor learning capacity are plaguing our nation. The fastest-growing diseases have been associated with biological changes known to be caused by wireless radiation. And, importantly, DNA damage occurring remains a wild card over the long-term for our species as well as for the ecosystem.

Our government appears to have been 'captured' by the telecom industry, believing its false claims about safety without looking to the scientific literature itself, or to the tremendous amount of evidence for risk from RFR well documented in U.S. government studies. Many departments and agencies of the federal government have documented RFR risks going back decades, including the U.S. Naval Medical Research Institute, EPA, U.S. Air Force, U.S. Department of the Army, NIH, NASA, Department of Interior and the Defense Intelligence Agency (See ["Wireless Radiation - Is the U.S. Government Ignoring its Own Evidence for Risk?"](#)).

**The crux of the issue causing so much suffering and driving health costs is that FCC exposure guidelines for RFR are wholly inadequate, do not reflect the science, and are being used across the country, with FDA complicity, to mislead about the antennas' safety.**

The RFR exposure guidelines aim only to protect against thermal effects of the radiation. They do not address the well-established 'non-thermal' effects, including biologically disruptive frequencies, the peaks and pulsing, and increasingly complex signaling characteristics.

Importantly, the FCC guidelines have misled manufacturers of wireless devices and equipment, infrastructure installers, service providers, retailers, real estate owners, building managers and the public into believing RFR radiation is safe if in compliance with the FCC's thermal guidelines. Businesses and property owners have been able to take cover from liability in relying on these government sanctioned FCC guidelines. The public naively believes antennas

outside their windows (as in the case of the photo below from New York City) must be safe if they have been permitted or otherwise approved. I certainly made that assumption--and most others, unfortunately, do, too.



Citizens have placed faith in the permitting process and government oversight, only to learn proper procedures have not been followed to protect public health. Even people suffering terrible illnesses who are aware there are antennas outside their window, often do not think to connect the antennas with their health challenges, because they make the false assumption that our government would not have permitted the antennas were there actually science showing RFR radiation is not safe.

**This situation has been going on far too long and must stop. The truth about the FCC's inadequate exposure guidelines, and the FDA's hollow endorsement of the guidelines, must be known.**

Here is one example of how people are being misled by the FCC's exposure guidelines and by the FDA's agreement on those guidelines. In a Manhattan co-op, where antennas were proposed to be placed on a water tower on the building's roof, I advised the Co-Op's Board of Directors not to allow the antennas. I read, and formally rebutted, Pinnacle Telecom Group's report to the Board of Directors and attended the Board meeting, along with representatives of Pinnacle and Verizon. I heard Pinnacle's misleading presentation that the FCC and FDA had certified there was no RFR risk from the antennas. Pinnacle's [report to the Board of Directors](#) stated the following:

*"Note that both the FCC and the Food and Drug Administration (FDA) have certified that continuous human exposure at RF levels up to and including the FCC MPE [i.e. maximum permitted] limit is considered to present no RF health risk. Moreover, the FCC MPE limit has been designed to provide appropriate protection for humans of either sex, all ages, all sizes, and under all conditions."*

This is false. Were it not for my quickly commandeering the meeting, telling the Board Members that what they were hearing was false, and then delivering a scientific presentation on the matter, the proposed antennas would have been approved, and then impacted the health of people on the higher floors of this building, as well as those living in many neighboring buildings.

The media also regularly misleads about RFR risk. Reference to the FDA deeming the radiation 'harmless' is found in the recent *Wall Street Journal* article, dated November 13, 2021, "[Are AirPods Out? Why Cool Kids Are Wearing Wired Headphones](#)". The message that the FDA currently deems the radiation "to be harmless to humans" presumably reached the Wall Street Journal's 3.4 million circulation.

*"...Biz Sherbert, a cultural specialist at youth culture-focused creative agency the Digital Fairy, narrated a TikTok video on corded headphones. "It seems that people are very concerned about the potential Bluetooth radiation that comes from AirPods," she concluded based on the video's comments. (While Bluetooth headphones do emit non-ionizing radiation, the Food and Drug Administration currently deems it to be harmless to humans.)"*

**It is time for the FCC and FDA to come into integrity and make clear the limited nature of their investigation into RFR risks, acknowledging that they, too, have become captured by the telecom industry. We must stop suppressing the truth about risks of RFR radiation.** (See Harvard University's Edmond J. Safra report, "[How the Federal Communications Commission is Dominated by the Industries it Presumably Regulates](#)".)

If the FCC says it relies on the safety expertise of the FDA, and states it considered opinions of the FDA in setting its safety guidelines, but the FDA officially does not review the safety of radiation emitting telecommunications technologies, as it does with new drugs or medical devices, then where is the responsibility for assuring safety actually domiciled? Has responsibility for ascertaining safety potentially fallen through the cracks between these two agencies, resulting in a situation where proper protection of human, animal and environmental health interests is not taking place? And on what basis does the FCC, a communications commission charged with regulating interstate and international communications, and not a health agency, have authority to ascertain safety and establish RFR safety guidelines in the first place?

**It is essential that clarity be obtained regarding FCC and FDA responsibility for:**

- 1) Setting protective, biologically-based exposure guidelines for RFR;
- 2) Clarifying the pros and cons of different telecommunications technologies (fiber, wireless, cable, advanced copper, etc.) so that the public, government officials and businesses can make fully informed choices;
- 3) Conducting pre-market safety testing of wireless devices and wireless infrastructure prior to release onto the market;
- 4) Conducting post-market monitoring of RFR exposures from each antenna, and the aggregate antennas in a neighborhood, to assure compliance with FCC guidelines;
- 5) Conducting short- and long-term post-market health monitoring of individuals living in dense wireless environments;
- 6) Conducting short- and long-term post-market health monitoring of natural environments exposed to RFR;

7) Educating the public about health risks associated with RFR exposures and how they might be able to be reduced.

The American people must be assured that regulators' top priority is public health and safety.

Additional steps that can restore trust that has been lost due to lack of clarity on responsibility between the FCC and FDA and failure of government to protect public health can be found in "[33 Recommendations for the FCC, FDA and Congress](#)".

Respectfully submitted in support of the Petition for Rulemaking to the Secretary of the U.S. Department of Health and Human Services by Americans for Responsible Technology et al.

A handwritten signature in black ink, reading "Camilla R. G. Rees", followed by a long horizontal flourish line.

Camilla R. G. Rees



## **G. StopSmartMeters.org — Joshua Hart**

My name is Joshua Hart, and I reside in Plumas County, CA. I am Executive Director and Founder of Stop Smart Meters!<sup>105</sup>, an organization fighting the forced deployment of utility meters that harm health, violate civil liberties and endanger public safety. I have worked in the energy industry, as an urban and transportation planner, environmental advocate, and freelance journalist. I obtained my MSc in Transport Planning in the UK at University of West England, Bristol in 2008 I have worked for a number of professional health and environmental advocacy organizations, including the Rails-to-Trails Conservancy<sup>106</sup>, San Francisco Bicycle Coalition<sup>107</sup> and Living Streets<sup>108</sup>. Since 2010, I have been director of California-based Stop Smart Meters!<sup>109</sup> I have studied the relevant literature regarding aspects of the current “smart grid” deployment including studies on RF health and environmental impacts.

I am submitting this document in support of the petitioners and on behalf of potentially millions of smart meter victims suffering from a wide range of health effects from mild to severely debilitating as a result of their exposure to so-called “smart” utility meters. Claims by manufacturers and utility companies that these meters meet or exceed all FCC safety guidelines for radiofrequency (RF) radiation may be technically true, but they are based on a completely false premise: that our nation’s primary health agency, the Food and Drug Administration (FDA) has actually established science-based standards on which those FCC guidelines are based. This creates an untenable and life-threatening situation for individuals whose lives have been upended because the FDA has not only failed to establish health-based standards, but has allowed the myth that it has created such standards to persist.

Many smart meter victims became sick before they knew a smart meter had been installed either on their home or in their neighborhood. Many didn’t even know what a smart meter was before they were injured. Some of these people have become so sensitized to RF that they have been forced from their homes because of proximity to area meters and other wireless infrastructure or have been forced to leave their jobs because of RF in the workplace. For many people who have become sensitized to RF, they have remained so even after the removal of the smart meter. It is astoundingly clear that smart meters can cause illness and that lasting sensitivity to RF can result from brief intense exposure and/or chronic exposure over time.

This assertion is based on the many individual testimonials we have received, thousands of peer-reviewed studies on RFR bio-effects, as well as personal experience being injured and suffering lasting effects from a bank of PG&E’s “smart” meters in 2011.<sup>110</sup> I can personally attest to the access barriers that such an injury and sensitivity result in, having had difficulty finding housing, obtaining safe wired internet access, and accessing government and social services which are increasingly online.

---

<sup>105</sup> <http://stopsmartmeters.org>

<sup>106</sup> <https://www.railstotrails.org/>

<sup>107</sup> <https://sfbike.org/>

<sup>108</sup> <https://www.livingstreets.org.uk/>

<sup>109</sup> <http://stopsmartmeters.org>

<sup>110</sup> <https://stopsmartmeters.org/2011/05/25/berkeley-emf-analysis-and-rip-shrub/>

I do not have any reason to doubt the veracity of those affected, and do not believe in the conspiracy theory that thousands of people would make up virtually identical health complaints. Those who had no knowledge of the presence of a smart meter, but still suffered the same impacts, belie that argument.

It is clear that the FCC's RF exposure guidelines, based on the thermal standard, is outdated and inadequate to protect public safety. People suffering the results of rapidly increasing and under-regulated wireless emissions feel that their voices are not being heard and that the government is allied with the utility and telecommunications industries even in the face of compelling scientific evidence that they are causing widespread harm.

### **Smart Meter Fires, Explosions and Electrical Problems**

Thousands of fires, explosions, and electrical problems related to smart meters have been reported over the past 6-7 years. We have reported on a number of such fires and electrical faults on StopSmartMeters.org. A series of 26 smart meter fires forced Peco Energy in Pennsylvania to halt their smart meter deployment in August 2012. Hundreds of thousands of smart meters have been recalled, across several US states and Canadian provinces due to fire safety problems.

#### **SmartMeterHelp.com**

Stop Smart Meters! has collected complaints about smart meters related to RF health impacts, fires, overcharging, and other issues since October 2011. We worked with a web professional who volunteered to design and manage the website <http://smartmeterhelp.com>. Results of online surveys came in from all over the country, were entered into a SQL database, and complaints from California periodically forwarded to Governor Jerry Brown, the customer's utility company, the California Public Utilities Commission, and the California Department of Public Health, who set up a special e-mail address to receive smart meter health complaints. More than 1400 written complaints in total were received. The attached declarations (attached as Appendix B) were received in response to an email request to those complainants who entered an electronic complaint at [smartmeterhelp.com](http://smartmeterhelp.com). I have reviewed each of the attached declarations. They are all true and accurate copies of the declarations received by Stop Smart Meters!

Given the strong peer-reviewed science now linking wireless radiation to disease, and given my own firsthand experience, a policy decision to blanket entire communities with smart meters and associated infrastructure poses a serious threat to public health and safety.

Particularly relevant are the results of a recent study from the National Toxicology Program<sup>111</sup> which found significant levels of DNA damage, and brain and heart cancer in rodents exposed to ambient RF— of a similar type to that emitted by wireless utility smart meters. The fact that sub-thermal levels of microwaves are linked to biological changes has been well demonstrated. Nora Volkow, Director of the National Institute of Drug Abuse at the National Institutes of Health, found that cell phone radiation caused an excitation of neurons in the brain, leading to increased glucose metabolism.<sup>112</sup> In addition, a 2014 peer-reviewed Australian

---

<sup>111</sup> <http://biorxiv.org/content/biorxiv/early/2016/05/26/055699.full.pdf>

<sup>112</sup> <http://well.blogs.nytimes.com/2011/02/22/cellphone-use-tied-to-changes-in-brain-activity/>

study<sup>113</sup> linked smart meter radiation to a series of symptoms, the most commonly reported being headaches, insomnia, and tinnitus. This is consistent with the smart meter health complaints we have received. A smart meter, unlike a cell phone, cannot be switched off without terminating electrical service in the home. Smart meter companies have revealed that their products emit up to 190,000 microwave pulses/ day<sup>114</sup> and this is not something that customers can easily avoid particularly in areas without formal opt out policies.<sup>115</sup>

Smart grid companies, utilities and smart meter deployment contractors have continually violated even weak FCC oversight laws. For example, PG&E smart meters are installed in violation of the FCC's Grant of Equipment Authorization, in three respects: co-location, lack of professional installation, and lack of 20cm mandated distance from all persons.<sup>116</sup> Rural wi-fi companies like Digital Path place microwave transmitters with the high-powered beams crossing sidewalks at head level (as along school walking routes in Portola, CA) even though FCC regulations require that antennas this powerful must be located at least 10m above the ground for safety<sup>117</sup>.

Utilities and regulators have been aware for many years that smart meter microwave pulses are harmful, cause injury, and both cause and exacerbate electrical sensitivities. In September of 2010, Michael Peevey, who was at the time president of the California Public Utilities Commission, admitted to PG&E executives that he believed that people do in fact feel pain from smart meter microwave signals.<sup>118</sup>

*"There really are people who feel pain, etc., related to EMF, etc., and rather than have them become hysterical, etc., I would quietly leave them alone. Kick it around..."*

Despite this, the public have been charged to keep smart meters off their homes for nearly ten years, and many living in multi-unit housing or near smart grid antennas have had no choice but to be exposed. Many of those resisting installation, including in PG&E territory, have been bullied, threatened, physically assaulted and their property damaged.<sup>119</sup>

In areas of RF safety, privacy, fair and transparent billing practices, cybersecurity, efficiency and fire safety, basic electromechanical analog meters remain superior. Stop Smart Meters! continues to offer assistance to members of the public who seek to prevent installation, have smart meters removed from their property, or organize to promote awareness of these problems in their communities. We provide a toll-free hotline, website, an online store providing EMF meters and EMF-related technical assistance, we continue to testify at public hearings and meetings. We are seeking to have sub-thermal RF human and environmental impact studies

---

<sup>113</sup> Reference: Altern Ther Health Med. 2014; 20(6): pp 28-39.

Author: Federica Lamech, MBBS, a medical practitioner in Melbourne, Victoria, Australia.

<sup>114</sup> <http://web.archive.org/web/20120221232316/http://blog.sfgate.com/energy/2011/11/03/ smartmeters-send-almost-10000-signals-a-day/>

<sup>115</sup> <http://www.stopsmartmetersbc.com/wp-content/uploads/OPT-OUT-FEES.pdf>

<sup>116</sup> <https://stopsmartmeters.org/2011/09/19/smart-meters-violate-fcc-regulations-period/>

<sup>117</sup> See Attachment E.

<sup>118</sup> <https://stopsmartmeters.org/2015/02/26/pge-suggested-prozac-for-those-injured-by-smartmeters-sce-schemed-higher-fees-to-force-smart-meters-on-the-poor/>

<sup>119</sup> <https://stopsmartmeters.org/category/installer-threats-and-assaults/>

considered and balance restored to wireless health regulations to ensure that health is prioritized and people are no longer injured or forced to leave their homes or become marginalized in their communities, so that the smart grid industry can make a profit.

## **Attachment A: Joshua Hart MSc CV**

Joshua Hart  
PO Box 682  
Portola CA 96122  
joshuahart@baymoon.com

### **EDUCATION**

#### **MSc Transport Planning**

June 2008

University of the West of England, Bristol

**Bachelor of Arts in Psychology** Minor in History, June 1998

University of California at Santa Cruz

### **EMPLOYMENT**

#### **Director, Stop Smart Meters! StopSmartMeters.Org** July 2010- present

- Educated the public about the health, safety, and privacy impacts of digital “smart” meters, through broadcast, print, and online media
- Provided technical assistance to dozens of groups and individuals opposing the smart grid and organizing locally
- Interpreted the science on biological effects of wireless for the public benefit

#### **Consultant, San Francisco County Transportation Authority** May 2006 to August 2007

- Researched environmental impacts of automobiles to inform a proposed shift from auto level of service (LOS) to auto trips generated (ATG) as an environmental review threshold
- Collaborated with colleagues to identify strategies to bring San Francisco’s environmental review processes into line with latest knowledge on environmental impact of automobiles

#### **Program Director, San Francisco Bicycle Coalition** January 2003 to April 2005

- Initiated and ran SFBC’s BikeEd Program, based on the League of American Bicyclists BikeEd curriculum, teaching safe cycling skills to thousands of adults citywide.
- Organized members and allied community groups to support improvements in the City’s bicycle route network, as well as changes in policies to support greater levels of cycling, testifying at dozens of City Hall hearings and meetings.
- Ran publicity campaigns to educate motorists and cyclists on safe roadway sharing

#### **CA Project Coordinator, Rails-to-Trails Conservancy** January 2000-June 2002

- Provided in-depth technical assistance to a variety of local advocacy organizations and public agencies around California working on rail-trail conversions
- Gave presentations to elected officials and community groups about the benefits, proper design, and management of public trails and on-road bicycle and pedestrian facilities
- Organized statewide legislative trail advocacy day in Sacramento to support the efforts of dozens of organizations engaged in trail policy development
- Researched and authored Tunnels on Trails, a study of 78 bike/ pedestrian tunnels in the United States (2001) as well as The Mission Creek Bikeway Concept Plan (2002)

#### **Energy Sales Coordinator, Green Mountain Energy** June 1999- December 1999

- Negotiated partnerships with retail outlets in San Francisco, Oakland, San Diego, and Santa Cruz as part of the California storefront tabling program
- Trained/ managed Field Consultants in sales strategy, environmental policy, and data concerning climate destabilization, energy use, and transport

**League Cycling Instructor**, League of American Bicyclists June 1998-June 2006

- Underwent intensive teacher's training program (both on and off road) and became accustomed with strategies for teaching the leading US cycling curriculum
- Organized, planned, and taught BikeEd classes to community groups and businesses with an emphasis on the environmental benefits of decreased auto dependence

**ADDITIONAL SKILLS**

- Attended Spin Project media training course, which advised on media strategy for charitable organizations San Francisco April 2004
- Extensive experience dealing with television, radio, and print media concerning a range of cycling, environmental, and climate messages

References available on request.

## **Attachment B: Individual Case Studies of Smart Meter RF Harm**

Following are ten selected reports we have received of smart meter health problems (we have not had a chance to thoroughly investigate these complaints but the initial analysis is that these reports echo the many thousands we have received:

1. "I live in a 4-unit Victorian building, top floor Condo. The Smart meters are housed in a small shed enclosed area which is attached to the main building. My bedroom wall/ window face near that side. I hear noisy vibrations more in this room, less daytimes, more nights, so that it wakes me up. I have Wi-Fi, iphones, microwave (unplugged, I have never use it ) and the internet. I am using wireless MonkeyBrains service. I was away for a week in Florida with family and felt my normal self again. After the first day back my body felt terrible, nervous, nausea, numbness in both hands, headaches, dizziness, irritable moods. I can't sleep well, my heart racing in my sleep. I have turned my fax machine and breaker box off at nights in hopes it would help. During the day I feel heavy pressure and noises in my ears and my eyes are more sensitive to light. There is an annoying constant low drumming vibration that I hear inside my apartment during the day and sometimes stronger at night, especially around 3:30 a.m. The only new appliances in my home are a Vitamix machine and electric coffee maker. I have had a healthy lifestyle for years and am vegan. Do you know what's happening or what the cause could be? I seems to be the only one that can feel and hear it. Thank you kindly for your time."
2. "I am a mom of a 13-year old whom, I believe, is the victim of EMF exposure due to a smart (water) meter placed in our home in October 2016. We knew nothing about the dangers, and when we received a letter stating they were having difficulty accessing our meter and wanted to replace it, my husband gave the okay. Since then, my son has come down with many symptoms including, but not limited to, cardiac issues (cardiologist has no answers), SEVERE insomnia, eye pain, headaches, nerve issues, brain fog and inability to concentrate... and the list goes on. I contacted the City and told them I want it removed and am getting the runaround. I will be meeting with my State Representative this week to see if he can help. Do you have any advice, direction, forms, or way of helping me? Thank you for your time."
3. "I am seeking help about getting rid of smart meters. Because this is a condo, all 6 meters are outside my bedroom wall. Since I moved back to my condo, I have sleep deprivation, headache everyday and my eyes hurt. As soon as I go to bed, they start itching and burning and I have pain in my left eye. I never had that problem. I thought it was because I am getting old. When my electricity bill came it was too high, I called the utility to complain and asked for help. Nothing was solved. I used a flashlight all month and rarely used electricity, but my bill went up. I started to search to see if I could find other people with similar complaints. I came across other reports about smart meters. I definitely want them to be removed and get my money back. I paid for energy I did not use. If you can help me, please either email me back or call. I am searching a good attorney."
4. "Some time ago we had a new power usage meter installed. I am a bit unsure if it is a smart meter or not. It does have a digital LED display and an orange blinking light. After it was

installed, my usual ailments and problems seemed amplified somehow. I don't know if this is connected to the new meter but I don't rule it out either. Problems such as chronic constipation seemed to get worse. Also I have more problems sleeping and am more irritable. I have a strange airy light "unsolid" feeling in the body. My hair feels electric / static. I have increased general sensitivity. Could this have something to do with that meter?"

5. "The utility did the same thing to us just before Christmas 2015. I had them remove an "advanced meter" they had placed without my knowledge or consent. My oldest son is severely autistic and suffered his first seizure right after they placed the meter. They said that I had to pay an opt-out fee for a couple of years if I didn't want the new gas meter. I told them that I was never even informed about them placing this on my house, so I obviously didn't opt-in. They said that the opt-out fee was approved by the CPUC and is mandated. I told them that I'm not paying it and they said that they'll send someone out to disconnect our service the next day. They kept their promise. The utility guy asked me if I wanted to change my mind and accept the "advanced meter" to avoid disconnection or write him a check. I refused to do either and we managed to make it for 2 days without hot water or heat before my kids ganged up on me and told me that I was ruining their Christmas. I succumbed to their protests and paid the extortion fee as well as a reconnection fee which was something like \$300. The energy mafia sent Vinny to break my knees, or maybe just my bank account. The Energy Policy Act says that these devices aren't mandated, but are to be offered to customers upon request. WTF! They go around bullying and trying to intimidate people into accepting this technology that has no safety studies and is, as most people now know, an extreme health threat. They're trying to convince their customers that they're federally mandated and they're not. Even if they were mandated, we should never cooperate with unjust laws. They can't just make these laws that don't serve us (only serves them and their corporate masters) and expect us to abide by them. Do we not have a right of ownership to determine what goes on our homes if something is obviously harmful? We need a class action lawsuit against these energy companies or a mass action where we all have these damn meters taken off our houses and stop paying their extortion fees. What would they do then?"
6. "We are homeowners and have lived in our home for 24 years. We have no-trespass signs all over our front yard and we had a note saying no smart meter on our house. Lo and behold, without our knowledge, we found a smart meter. We called the utility and we were told too bad. They will not remove it. We have put up surveillance equipment and I watched a utility guy put smart meters on the condos next door to us. It took him all of 10 minutes to switch out 3 or 4 meters. Since our smart meter, I now have headaches on a regular basis. Ringing in my ears and strange blisters have formed all around my lip line twice since receiving this meter only a couple of months ago. I'm 57 years old and I have never even had a cold sore in my life until now. How can this be legal? We OWN OUR HOME! How can a privately owned company have more rights to our property than we have? Do they pay our mortgage and huge property taxes? How can this be??? Are there any class action law suits?"
7. I always thought this Smart Meter phobia was craziness. But I've been having some health problems since they installed a Smart Meter on our house and I found this site by accident while looking up my symptoms and was shocked! About a month ago they replaced our analog meter with a Smart Meter. The meter is on the other side of the wall in the room

where I spend 99% of my time in my house. It's less than 8 feet away from me separated by an 8-inch-thick wall. A few days after they installed it I developed severe vertigo. I've never had a problem with dizziness in my life. I'm having a terrible time concentrating and have been hearing beeping sounds later in the evenings around 11 pm. I basically can't function anymore due to the vertigo and lack of concentration. I don't know if it was just my time to start having health problems or what, but it sure is one hell of a coincidence that this started when they installed this so called 'Smart Meter' and I found this site completely by accident when looking up my symptoms. That said, I have my PC in this room and it uses Wi-Fi and I don't have any problem using it. I'm not seeing any detectable interference problems with the electronics in my home."

8. "I am 65 years old and live in a shelters accommodation (40 flats) in the UK. Last October I had an offer of "free upgrade" for my electricity meter and as I did not know anything about "smart" meters and was not provided with any information my electricity provider fitted one. Almost immediately I got very sick, nausea, nasty headaches, disturbed sleep, itchy burning skin, muscle and joint pains and a lot more. For the last 16 years I was campaigning for fathers' and children's rights after divorce and that included two hunger strikes (2000 and 2010). I also suffered a stroke in 2011 and that has possibly made me a lot more vulnerable to microwave RFR."
9. "Smart Meters were forced upon us here. It is a nightmare for me as I have 2 sons with autism who are affected by the radiation as they are extremely sensitive. I sent a letter to hydro requesting they remove it and even got our landlord to sign it but they refused saying they would not remove them. Do you know of any support in my area? I would love to volunteer. I am sick of being poisoned. Thank you. Much Gratitude for all you are doing!"
10. "Hi Josh – thanks for all you do. In a nutshell – I am a recovering smart meter victim in. I had been receiving emails for at least 3 years from a natural doctor about their dangers. When they first started installing them locally, I remember seeing something on the news about one woman across town trying to fight it and not winning. So when they showed up at our house to install them sometime during the spring of 2013, I hoped for the best as I had my hands full with other things. I didn't think about the fact that I was already on Social Security/Disability for an arthritic condition. My husband and I were the live-in caretakers for my then 85year old father who had advanced dementia, some urinary incontinence, and used a walker. My husband also was working at 2 different jobs. We had 4 cats. We figured we would just have to find a way to co-exist. We didn't own smart phones and I didn't use Wi-Fi on my computer. My husband occasionally used Wi-Fi on his. "It took me a while to become extremely sick after the meters were installed. We just thought that stress was aggravating my pre-existing health issues. Plus I'm middle-aged – we figured that played a factor. I had been getting better from one thing for a little while and now I was taken down very hard by something else. My recovery periods also became shorter and I didn't really feel all that well during them. By mid-July 2015, I was so sick and my primary care physician was completely baffled. The other specialists she had referred me to before within the last 15 or so months had made me worse. She referred me to a natural doctor in another city. I told her that I would call her within the week if I didn't feel better. When I finally called her on July 27, 2015, she had a 6 week waiting list. I didn't think I would live that long. My

husband convinced me to call the natural doctor who had been sending me the emails. I called her and she said it was the meters. I called the utility that afternoon. We don't have an opt-out program in our state. I was told by the natural doctor to be prepared for a fight. I gave my request to a customer service agent. She said someone would call me but she didn't say when. That was at 3:45 p.m. "The following morning at 9:45 a.m., I received a call from the employee in charge of the program. He started saying all this legal stuff to me. I asked how long the meters had been on the house. He could only confirm they had been on over 2 years – he could not give me an exact date. He said I had to agree to whatever they wanted to charge me when they finally decided what they would charge for this. I also had to agree to a reading fee if and when they decided on that – but again he couldn't say how much that would be. He said he would make sure that I received the original analog meters on the house rather than the newer analog ones with the digital faces so there would be no confusion. We have a 2-family house so we had 2 gas and 2 electric meters. He said he would make sure that the gas meters were off by noon the next day. If he could find the electric ones within the <redacted>, those would be off by the next day by noon as well. If he could not locate them that day, they would definitely be off by noon on Thursday. He gave me his direct number and said to call him if they weren't all removed by noon the following day. They were all off by 11:00 a.m. on Wednesday, July 29. I started to slowly recover within a couple of days. "As I started to recover, I realized it hadn't been just me who had been affected. My dad had serious bowel problems for about a week around the time they were originally installed in June 2013. We thought we'd have to put him in a nursing home and started making arrangements. Fortunately he recovered from that in about a week. But his fillings then started falling apart in his mouth. I took them to be repaired. He had seen the dentist 6-8 months earlier and there had been no indication that would happen. We did start getting some home health care to come in to help with bathing him daily. He didn't want to listen to his middle aged daughter but he'd follow orders when nurses arrived. His dementia increased but he never tried to leave the house. His urinary incontinence increased but he'd worn diapers for years. When the bowel issue came back in mid-October though, we had to put him in skilled nursing. It was devastating for us. "Our cats also became sick one by one after the smart meters went on. I'll spare the details. By February 2015 we had said good-bye to the 4 we had when the meters were installed in 2013. We had taken in 2 other strays from the neighborhood in October 2014 – a mother and her female kitten. They drink a lot of water but seemed to be okay so far. The kitten is now about 1 years old. She isn't the brightest cat I've ever had but we love her anyway. "My husband isn't home as much as me. He hasn't seemed to be affected. However, as I recovered I started talking to my neighbors. I can point at apartments and houses and tell you a lot of stories about sick people – directly next door on one side as well as directly across the street in the apartment building as well as the house next to it. I have talked to other people here and there within a few blocks as well. There are more people with unresolved chronic health issues that started within the last couple of years than people without them. It seems to affect people who are home more also – like me. Women, senior citizens and pets seem hit the hardest of those I've talked with. "I'm trying to make contact with different people here in my state. I'm waiting on for a call back from an activist I learned about a couple days ago. I live in a lower to middle income neighborhood within a couple blocks of a college. The city is concerned about revenue and expansion. Unfortunately also as I started to recover, fall classes started up again which created a huge influx of people and business back into the neighborhood. My house – even without the

smart meters – is being affected by everything else around me. This is also affecting my recovery. I no longer take walks in my neighborhood.” “There has been a lot of expansion at the college over the last 2 years also. According to [www.antennasearch.com](http://www.antennasearch.com), there are 437 towers and 63 towers within a 3 mile radius of my address. Some are within a couple blocks of my house. I don’t have proof that everyone is getting sick because of all of this. But there seem to be a lot of sick people around here.

In terms of more in-depth investigations into the impacts of smart meter on the health of individuals, please see the links below to articles published on our website. In the cases listed (and linked) below, radio-frequency radiation (RFR) from “smart” meters or other RFR-emitting devices was found to be the likely cause of these symptoms and health problems. The basis for the determination included detailed interviews with those effected, RF measurements on site in some cases, comparing reported symptoms with those reported in peer-reviewed scientific studies at similar frequencies and power density levels, and any presence of symptoms prior to installation, after installation (in some cases symptoms appeared without any knowledge of installation by the resident(s)), and disappearance of symptoms after removal and replacement with a non-RFR-emitting analog meter.

### **Attachment C: Firsthand reports of smart meter (microwave) illness**

1. June 2011 Winifred <http://stopsmartmeters.org/2011/06/16/winifred/>
2. October 2011 SM Health Effects Worsening- two cases  
<http://stopsmartmeters.org/2011/10/25/smart-meter-health-effectsworsening/>
3. October 2011 Monise Sheehan <http://stopsmartmeters.org/2011/10/03/utility-lies-threats-of-night-time-raidsfederal-prosecution-one-woman%e2%80%99s-pge%e2%80%99csmart%e2%80%9d-meter-nightmare/>
4. December 2011 Smart Meter Return <http://stopsmartmeters.org/2011/12/08/the-great-smart-meter-return/>
5. Sept. 12 2012 Sarah, Las Vegas, NV <http://stopsmartmeters.org/2012/09/12/smart-meter-or-no-power-at-allpower-company-sends-three-armed-men-to-disconnect-power-just-foropting-out/>
6. March 17 2013 JN, Long Beach, CA <http://stopsmartmeters.org/2013/03/17/edison-meters-suspected-in-longbeach-throat-cancer-case/>
7. May 27th 2013 Shari Anker <http://stopsmartmeters.org/2013/05/27/forced-seizures-in-port-st-lucieflorida/>
8. April 5th 2014 Andrew McAfee <http://stopsmartmeters.org/2014/04/05/interview-with-andrew-mcafee-ofraleigh-es/>
9. May 6th 2015 Anura Lawson <http://stopsmartmeters.org/2015/05/06/la-public-school-accommodateselectro-hyper-sensitive-teacher/>
10. August 26th, 2016 Various SM Injury Testimonials Submitted to the Maine Public Utilities Commission: <http://stopsmartmeters.org/2016/08/26/smart-meter-injury-testimonials/>

## **Attachment D: Fires / Explosions related to Smart Meter Infrastructure**

Utilities have been documented removing smart meters from fire scenes making official, accurate investigations of such incidents often impossible:

- <https://smartgridawareness.org/2015/07/28/utilities-removeburned-smart-meter-evidence-from-fire-scenes>
- <http://stopsmartmeters.org/2015/05/21/hundreds-more-smart-meters-blowoff-wall-in-capitola>
- <http://stopsmartmeters.org/2015/03/31/wheels-falling-off-smart-grid-as-pgesmart-meters-explode-burn-smoulder-in-stockton-ca-after-dui-drivercrashes-truck-into-pole/>
- <http://stopsmartmeters.org/2015/02/04/man-dies-in-dallas-house-fireattributed-to-oncor-smart-meter/>
- <http://stopsmartmeters.org/2014/09/15/smart-meter-fire-death-injuriesreported-in-reno-nv/> <http://www.rgj.com/story/news/2014/09/13/reno-sparks-fire-chiefs-callsmart-meter-probe/15580069/> contains the statement that, "Based on physical evidence in the Rhinestone matter, the Sensus meter cannot be eliminated as the ignition source." Investigator Andrew Thoresen wrote: "Data tends to suggest the meter may have failed." <https://smartgridawareness.org/2014/09/14/smart-meter-fires-spread-tonevada/>

The forensics report (33MB file at this link, <http://wp.me/a3nav9-3W8>) has the conclusion as cut and pasted below:

### Conclusion:

Based on the physical evidence in the Rhinestone matter, the Sensus meter cannot be eliminated as the ignition source. The meter displays extensive fire damage within the meter socket enclosure. Additionally, the electronic components associated with the meter display heavy fire damage and arcing. There was also a lack arcing found downstream of the meter. This data tends to suggest the meter (Rhinestone) may have failed. Conversely, all of the fire damage and arcing within the meter / meter socket enclosure could be explained if an approaching fire ignited the plastics associated with the meter very early in the fire. Extensive analysis of the fire scene and electrical system associated with the condominium (to look for arcing downstream of the meter) would be needed to determine if the meter failed to any probability.

- <http://stopsmartmeters.org/2014/07/07/another-fire-landis-gyr-smart-metercauses-apt-blaze/>
- [http://www.buckscountycouriertimes.com/news/local/electric-meter-blamedfor-bensalem-apartment-fire/article\\_93cf65bb-a298-5978a88e-464c2f4451e1.html](http://www.buckscountycouriertimes.com/news/local/electric-meter-blamedfor-bensalem-apartment-fire/article_93cf65bb-a298-5978a88e-464c2f4451e1.html)
- <http://stopsmartmeters.org/2013/07/09/stop-smart-meters-investigatesutilities-lie-while-people-die/>
- <http://stopsmartmeters.org/2013/06/21/when-smart-meters-kill-the-story-oflarry-nikkel-details-emerge-of-vacaville-ca-smart-meter-fire-death/> "undetermined, but was most likely caused by an electrical problem" (lawsuit by family of the victim against PG&E, Wellington Energy and Landis & Gyr settled for undisclosed amount) <http://stopsmartmeters.org/wp-content/uploads/2013/06/Nikkel-complaint.pdf>

**Attachment E: FCC Rules Mandating 10m clearance from ground on high emitting antennas**

**Erica Rosenberg, FCC NEPA Attorney/ Assistant Chief,  
Competition and Infrastructure Policy Division, Wireless  
Telecommunications Bureau**

*"If one of those circumstances are met, then an Environmental Assessment is triggered. In other words, **if the RF is above our limits, they need to do an Environmental Assessment.***

**In FCC Rule §1.1307, it states:.**

*"Commission actions granting. . .licenses to transmit . . . require the preparation of an Environmental Assessment (EA) if exposure to levels of radiofrequency radiation [are] in excess of the [FCC] limits."*

**Then in Table 1 of FCC Rule §1.1307:**

*(b)(1) "Evaluation **required** if Non-building-mounted antennas [have] height above ground level to lowest point of antenna **<10 m** and total power of all channels **>1000 W ERP** (emphasis added)"*



## **H. Lawrence J. Gust — Building Biology Institute**

My name is Lawrence Gust, founder of Gust Environmental. I am submitting this declaration in support a legal effort to persuade the Food and Drug Administration to exercise its responsibility for protecting public health by immediately initiating the process of setting science-based, health-based standards for exposure to pulsed radiofrequency radiation emitted by the wide variety of wireless devices currently being marketed to consumers. The lack of such health-based guidelines for exposure to radiofrequency radiation (RFR) is leading to a dangerous reliance by the public and local decision makers on false information and misinformation regarding the safety of RFR, creating an imminent hazard for people across the country.

I am certified as a Building Biology Environmental Consultant (BBEC) and a certified Electromagnetic Radiation Specialist (EMRS) through the Building Biology Institute (BBI). I also hold a BS in Electrical Engineering and an MBA from the University of Wisconsin, Madison, WI. I am currently an instructor at BBI. I teach the 5-day foundational electromagnetic radiation seminar and lab and the 5-day Advanced Electromagnetic Radiation Seminar and lab. I am president of the BBI Board of Directors. I live in Ventura, California and work throughout the United States.

The mission of the Building Biology Institute (BBI), a 501(c)(3) non-profit corporation, now in its 34<sup>th</sup> year, is to enable practitioners and the general public to create healthy homes, schools, and workplaces free of toxic indoor air, tap-water pollutants, and hazards posed by electromagnetic radiation exposure. BBI is the only educational entity in the United States that trains, equips and certifies professionals in the holistic evaluation of the built environment. [www.BuildingBiologyInstitute.org](http://www.BuildingBiologyInstitute.org)

### **Education and Training of BBEC and EMRS Practitioners**

BBI's background and program requirements are pertinent to the accuracy and veracity of the information coming from the field referred to later in this declaration.

BBI's teaching is based on the twenty-five Principles of Building Biology brought from Germany to the English-speaking world in 1987 by the German architect Helmut Ziehe. BBI's three professional certifications are based on specific online study requirements, plus multi-day on-site seminars and a mentored final project:

To be listed as a practicing professional on the BBI website, certified BBEC professionals must provide approved continuing education credits from courses obtained through BBI or other institutions.

### **Activities of Gust Environmental**

Since 1993, my company, Gust Environmental, has served clients in the US, Canada, Europe, and Oman. We specialize in complete assessment of indoor environmental health factors from the perspective of the human sensitivity to environmental toxins. I have evaluated and recommended remedial measures in over 1,700 residential and commercial buildings. I consult on the environmental aspects of the construction and remodeling of a homes and offices. I give public presentations to explain EMF to the general public- the causes and the effects — particularly sources and dangers of pulsed radio frequency radiation with emphasis on the 5G cell system. These presentations are attracting growing numbers of concerned, angry citizens.

My business activities bring me into contact with many, many people who are suffering from exposure to radiofrequency radiations over which they have no control. Within the last 20 years as cell phones and their infrastructure and other wireless communications devices became ubiquitous, client health complaints often correlated more frequently to the level of RF exposure inside the residence. These health complaints radically affected quality of life and cause significant suffering. In all cases, levels of RF found in these residences were orders of magnitude less than the FCC standard.

### **The FCC and FDA**

Based on my observations, I have been concerned for years with the continued ignoring by the FCC and the FDA of the health dangers of pulsed digital radiation that has been proven without a doubt by thousands of peer reviewed studies by hundreds of researchers in multiple countries.

In response to the request by the FCC for comments pertaining to its review of the RF guidelines I expressed my concern over the lack of protectiveness of the FCC standard based on my field work in comments filed with the FCC on August 19, 2013, in regard to ET Docket No. 03-137 and ET Docket No. 13-84.

I was appalled when the FCC after seven years of ‘review’ made not a single change in the guideline despite having been provided with these thousands of studies showing health effects at RF power density levels several orders of magnitudes less than the current guideline.

The FCC is lying to the American people by their failure to take into account research which shows significant health damage. FDA is derelict in its duty to protect the American people by not guiding the FCC in setting RF safety and HEALTH guidelines. In its own words:

The Food and Drug Administration is responsible for protecting the public health by ensuring the safety, efficacy, and security of human and veterinary drugs, biological products, and medical devices; and by ensuring the safety of our nation's food supply, cosmetics, **and products that emit radiation.** (emphasis added)

According to knowledgeable scientists, this damage is occurring at the cellular level, and it is happening to everyone, whether asymptomatic or symptomatic. For the all-too-many unfortunate people who have special medical conditions, or who have developed Electromagnetic Hypersensitivity Syndrome, exposure to growing levels of RF is causing people to rapidly decline in health while enduring incredible suffering. Many of these people die years ahead of their time. For the vast majority of people, according to knowledgeable scientists, the expected lifespan is likely to be shortened, while the number of ill-defined medical conditions multiply.

The FCC is shirking its responsibility to the American people by continuing to use an outmoded RF measurement method that drastically understates the actual moment to moment level of RF exposure experienced by the body. The FCC measurement method was replaced years ago by other research organizations because research showed another measurement method to assess power density level better correlated to RF health effects.

Additionally, due to my position within BBI, I am plugged into the broader network of BBECs and EMRSs who serve the public across the United States and Canada.

## **BBI Certified Practitioner Field Experience**

I can state with confidence that the boots on the ground — Certified BBI practitioners — are seeing an unprecedented growth in the number of people, including children, the infirm, the disabled and those with preexisting medical conditions, who are intensely suffering from RF exposure they cannot control.

BBI practitioners, including the declarant, measure the radiofrequency radiation levels in homes, and if excessive, recommend means of remediation to reduce exposure. In all cases, the initial levels of radio frequency radiation found in these residences were orders of magnitude less than the FCC standard. Once RF power density reduction was achieved, BBI Practitioners normally saw a significant health improvement. Frequently, very ill clients are able to return from death's door to the land of the living.

RF radiation levels in homes, apartments, offices and schools is drastically increasing due proliferation of ever-stronger RF emitting devices that adhere to the dangerous, outmoded FCC radiation guidelines that do not take into account the additive effect of multiple RF sources in and around buildings. For example:

1. The new 5G network which includes two antennas — an enhanced 4G antenna and a 5G antenna — forecast to be installed on every residential street about every 8 to 10 houses or approximately every 1,000 feet. This has resulted in a measured 100-400-fold increase in neighborhood RF power levels due to proximity of the antennas to ALL residences, compared to macro towers which are often miles away from most residences.
2. Municipal Wi-Fi systems.
3. Wi-Fi mesh networks installed within homes and businesses to assure flawless reception in the furthest corner of every building.
4. RF-emitting entertainment system components that never turn off.
5. Cordless phones systems with increased RF power output for greater coverage.
6. Wireless burglar and fire alarm systems.
7. RF-based audio/visual baby monitors.

## **RF Shielding**

People who do not wish to be irradiated by outside sources beyond their control must pay for RF shielding themselves. People can shield each bed by installing a RF shielding tent over the bed. However, in the case of strong 4G/5G radiation, residents will likely need to shield the room itself, as well as tent the bed(s). This is because of unavoidable RF leakage in the tent and in a structure that has been retrofitted with RF shielding. For example, 99% shielding effectiveness allows 1,000 out of 100,000  $\mu\text{W}/\text{m}^2$  to enter the house, whereas the recommended level is in the range of 10 to 60  $\mu\text{W}/\text{m}^2$ .

## **Cost for RF Shielding Tents for Beds**

Shielding a queen size bed with a RF protection tent starts at \$1,250 for moderate shielding capability, and can be as much as \$1,700 for shielding of high RF radiation levels.

Shielding a twin bed will cost \$1,000 to \$1,400, depending on the level of protection needed.

A family with two adults and three children who wish to protect four beds from RF radiation will have to spend \$4,250 to \$5,900.

### **Costs for RF Shielding of Bedrooms**

Building Biologists focus on sleeping areas because this is where people are most vulnerable to RF, but this offers no protection to people who are home all day, like a mother with young children who don't want to or cannot stay in their bedrooms all day. (And this does not even address the exposure of people who want to enjoy their property outside the house.)

People can shield the bedroom itself by painting the walls with RF protection paint and putting RF protection film on the windows instead of tenting the bed. The cost for painting including labor is about \$3.15/ft<sup>2</sup>. For an average 12' x 12' bedroom with two 3'x 4' double hung single pane windows, the cost is \$2,450.

A family of two adults and three older children in separate bedrooms would have to spend \$9,800 to shield their bedrooms.

### **Cost of Bedroom RF Protection Against Residentially located 4G & 5G Antennas**

A family of two adults and three older children who all need RF tents and bedroom shielding will have to spend \$15,700 (assuming this will correct the problem, given the increased power density of neighborhood 4G/5G radiation).

### **Cost of Whole-house RF Protection**

Although not always possible, depending on the nature of the siding used on the house, the average cost of applying RF protection paint to the average existing 2,000 ft<sup>2</sup> house by painting outside stucco walls and the inside ceilings on the top floor is \$14,000.

If the house was built prior to 2000, the windows will need to be shielded with RF protection film. With an average of one window per 100 ft<sup>2</sup>, the house would have 20 average 3'x 4' windows and would cost \$2,900 to shield.

Total average cost for shielding a 2,000 ft<sup>2</sup> house is \$16,900.

### **Cost of Whole-house Shielding and Bed Shielding**

If RF levels are high due to installation of a 5G antenna system on the block, the house and the beds will all likely have to also be shielded.

Total cost for shielding the average 2,000 ft<sup>2</sup> house and tenting the parent's and children's beds will be approximately is \$24,250.

### **Shielding Cost Shifted to Private Citizens (Regulatory Subsidy)**

The only available statistic (statistica.com) reports a number of family units with three or more children less than 18 years of age. In 2019 that number was seven million families. If we make the assumption that all seven million families lived in single family houses, obviously untrue, but convenient for demonstration of the scale of the subsidy, then based on the above

assumptions, the cost for shielding from 5G System RF exposure is \$1.7 Trillion. This 'house' cost data could be applied to apartments as well as single family houses, although shielding in this environment is more complicated and landlord permission problematic.

## Recommendations

My recommendation is that the results of the several thousand studies be taken into account by the FDA who will advise the FCC in setting new RF exposure standards based on health effects. These new standards would then be applied to RF emissions from all types of RF emitting products including those listed above.

People should be educated by the Federal government via a large scale advertising campaign introducing the new safety Guidelines; how they affect allowed power output of RF emitting devices; how the RF emissions from various sources are additive in a living space, and the need for people to have living spaces with low levels of RF exposure in order to have good long-term health, whether symptomatic or asymptomatic. Written and videotaped tutorials should be provided showing people what they need to do in their homes to be safe, including installation of a hard-wired Ethernet system to provide service to all Internet connected devices.

Cell phone service providers should be required to collectively fund a public entity that pays for the shielding of homes and apartments where shielding is necessary. Shielding would be paid for after families are evaluated by an MD with an EMF specialty who is a member of the *American Academy of Environmental Medicine*. Landlords should be required to allow shielding of their properties. Eventually, all buildings with unacceptable levels of externally imposed RF should be shielded using funding from the industry.

**I declare under penalty of perjury that the foregoing  
is true and correct.**

**Signed** Lawrence J. Gust

**Print Name** Lawrence J. Gust

**Date** October 4, 2021

**Street Address** 211 S Brent St

**City, State** Ventura, CA

**Zip Code** 93003



## **I. Sharon Goldberg, M.D.**

Integrative Internal Medicine  
2019 Galisteo St. Suite N10C  
Santa Fe, NM 87505

10.11.2021

To Whom it May Concern:

I am writing in support of petitioners seeking a public admission from the U. S. Food and Drug Administration (FDA) that the current human exposure guidelines for radiofrequency radiation (RFR) being promulgated by the Federal Communications Commission (FCC) are not, in fact, based on a rigorous scientific inquiry conducted by the FDA itself. The FDA, by allowing its name and imprimatur to be improperly invoked by the FCC in public documents, misleads the American public and subjects millions of people to unacceptable health risks and harm.

I am a board-certified Internal Medicine Physician licensed in the states of New Mexico and Florida. I currently practice Integrative Medicine in Santa Fe, New Mexico and am active as a medical educator in the growing field of Clinical Electromagnetics. The 2021 EMF Medical Conference on the prevention, diagnosis and treatment of EMF Associated Illness showcases the Clinical Electromagnetics approach and philosophy, which considers the electromagnetic environment as a modifiable determinant of health.<sup>120</sup> I served as Course Director for the conference, as well as a session moderator and speaker. I am an Editorial Board Member of the Medical Journal *Electromagnetic Biology and Medicine*, and have co-authored research in the fields of nutrient supplementation, clinical nutrition, and autonomic nervous system assessment.

Although most physicians are unfamiliar with the biological effects of radiofrequency radiation RF exposure, I can attest that harm from RF exposure is not a rare occurrence. In my clinical practice, I have dozens of patients who have been harmed by overexposure to RFR. In fact, my office receives between 2-4 calls per month from new patients with EMF Associated Illness.

As the prevalence of EMF Associated Illness continues to increase, a key factor enabling ongoing expansion of wireless emissions is the current FCC “guideline.” To be clear, RFR including microwave radiation is an established environmental toxin. The basic science demonstrates that RF harms living cells and interrupts essential housekeeping functions (homeostasis) of living organisms. Harm is observed at levels a fraction of those deemed acceptable per current, non-biologically based guidelines.<sup>121</sup> The following is a partial list of documented RF bioeffects:

- a. Oxidative stress or “free radical damage” – the physiologic “cost” of using oxygen.  
Linked with numerous chronic conditions including diabetes, cardiovascular disease,

---

<sup>120</sup> [EMF – Medical Conference 2021 \(emfconference2021.com\)](https://emfconference2021.com/)

<sup>121</sup> By guidelines, I refer to the current IEEE (Institute of Electrical and Electronics Engineers), FCC and OSHA (federal) standards.

- Alzheimer's, infertility and aging. Free radicals, once formed, damage anything they run into, including proteins, cell membranes, and the cytoskeleton or matrix.<sup>122</sup>
- b. Depletion/depression of key anti-oxidant mechanisms when needed most. Anti-oxidants are the first line of defense against oxidative stress, therefore EMF's not only increase oxidative stress, but they suppress natural mechanisms for coping with oxidative damage via:
    - i. Suppression of melatonin, an anti-oxidant hormone.
    - ii. Suppression of Glutathione and SOD (superoxide dismutase) – key free radical scavengers.<sup>123</sup>
  - c. Mitochondrial damage – RF damages the energy generating parts of cells.<sup>124</sup>
  - d. Genotoxicity – RF damages our DNA leading to mutations.<sup>125</sup>
  - e. Cell membrane damage – leading to leakage and wreaking havoc on normal physiology.<sup>126</sup>
  - f. Cellular stress – human cells respond to RF in the same way as they do to any other poison, by generating a stress response which includes production of heat shock proteins.<sup>127</sup>
  - g. Blood brain barrier leakage – RF damages the protective lining that keeps harmful substances out of the brain, resulting in brain cell damage and/or death.<sup>128</sup>

In addition to basic scientific evidence, there also exists over fifty years of clinical evidence to reinforce the basic science conclusion that RF is a multifactorial toxin. Examples of clinical evidence of harms from RF exposure include:

- a. Clear evidence of cancer – Numerous experts concluded that based on current evidence, including the \$30 million National Toxicology Program conclusions, RF should be reclassified as a class I carcinogen. A 2018 review declared: *there is clear evidence that RF radiation is a human carcinogen, causing glioma and vestibular schwannoma (acoustic neuroma). There is some evidence of an increased risk of developing thyroid cancer; and clear evidence that RF radiation is a multi-site carcinogen. Based on the*

---

<sup>122</sup> Yakymenko, I., Tsybulin, O., Sidorik, E., Henshel, D., Kyrylenko, O., & Kyrylenko, S. (2016). Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation. *Electromagnetic biology and medicine*, 35(2), 186-202.

<sup>123</sup> Stopczyk, D., Gnitecki, W., Buczyński, A., Markuszewski, L., & Buczyński, J. (2002). Effect of electromagnetic field produced by mobile phones on the activity of superoxide dismutase (SOD-1) and the level of malonyldialdehyde (MDA)--in vitro study. *Medycyna pracy*, 53(4), 311-314.

<sup>124</sup> Xu, S., Zhou, Z., Zhang, L., Yu, Z., Zhang, W., Wang, Y., ... & He, M. (2010). Exposure to 1800 MHz radiofrequency radiation induces oxidative damage to mitochondrial DNA in primary cultured neurons. *Brain Research*, 1311, 189-196.

<sup>125</sup> Phillips, J. L., Singh, N. P., & Lai, H. (2009). Electromagnetic fields and DNA damage. *Pathophysiology*, 16(2-3), 79-88.

<sup>126</sup> Phelan, A. M., Lange, D. G., Kues, H. A., & Luty, G. A. (1992). Modification of membrane fluidity in melanin-containing cells by low-level microwave radiation. *Bioelectromagnetics*, 13(2), 131-146.

<sup>127</sup> Blank, M., & Goodman, R. (2009). Electromagnetic fields stress living cells. *Pathophysiology*, 16(2-3), 71-78.

<sup>128</sup> Nittby, H., Brun, A., Eberhardt, J., Malmgren, L., Persson, B. R., & Salford, L. G. (2009). Increased blood-brain barrier permeability in mammalian brain 7 days after exposure to the radiation from a GSM-900 mobile phone. *Pathophysiology*, 16(2-3), 103-112.

*Preamble to the IARC Monographs, RF radiation should be classified as carcinogenic to humans, Group I.*<sup>129 130</sup>

- b. The association of diabetes with RF exposure has been known for decades and is documented in the 1971 US Naval Medical Research Institute topic review.<sup>131</sup> Various researchers have shown that short term Wi-Fi exposure is a simple and effective means of creating a diabetic animal model in rats.<sup>132 133</sup> As per the American Diabetes Association, diagnosed diabetes costs America \$327 billion dollars annually (1 of every 7 health care dollars spent).
- c. Sperm damage and reproductive harm.<sup>134</sup>
- d. Deterioration of mental health, including our current nationwide epidemic of suicide. The science documents increased rates of depression, anxiety, anger, aggression, difficulty with impulse control and mood lability among individuals exposed to radiofrequency radiation.<sup>135,136,137</sup>
- e. Antibiotic resistance has been documented in many studies of wireless radiation exposed bacteria.<sup>138</sup> This is important because of the cost of treating drug resistant infections in the U.S., estimated at \$20 billion per year excess direct healthcare costs in 2008, and the danger of losing antibiotic efficacy.

---

<sup>129</sup> Hardell, L., & Carlberg, M. (2019). Comments on the US National Toxicology Program technical reports on toxicology and carcinogenesis study in rats exposed to whole-body radiofrequency radiation at 900 MHz and in mice exposed to whole-body radiofrequency radiation at 1,900 MHz. *International journal of oncology*, 54(1), 111-127.

<sup>130</sup> Miller, A. B., Morgan, L. L., Udasin, I., & Davis, D. L. (2018). Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102). *Environmental research*, 167, 673-683.

<sup>131</sup> Glaser, Z. R. (1971). Bibliography of reported biological phenomena ('effects') and clinical manifestations attributed to microwave and radiofrequency radiation. Naval Medical Research Institute Research Report Project MF12. 524.015-0004B. *Res. Inst., Nat. Naval Med. Center, Bethesda, Md.*

<sup>132</sup> Salah MB, Abdelmelek H, Abderraba M, "Effects of olive leave extract on metabolic disorders and oxidative stress induced by 2.45 GHz WIFI signals," *Environmental Toxicology and Pharmacology* 36(3): 826-834 (2013).

<sup>133</sup> Masoumi, A., Karbalaee, N., Mortazavi, S. M. J., & Shabani, M. (2018). Radiofrequency radiation emitted from Wi-Fi (2.4 GHz) causes impaired insulin secretion and increased oxidative stress in rat pancreatic islets. *International journal of radiation biology*, 94(9), 850-857.

<sup>134</sup> Desai, N. R., Kesari, K. K., & Agarwal, A. (2009). Pathophysiology of cell phone radiation: oxidative stress and carcinogenesis with focus on male reproductive system. *Reproductive Biology and Endocrinology*, 7(1), 114.

<sup>135</sup> Pall ML, "Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression," *Journal of Chemical Neuroanatomy* 75: 43-51 (2016).

<sup>136</sup> Levitt BB, Lai H, "Biological effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays. *Environmental Reviews* 18(NA): 369-395 (2010).

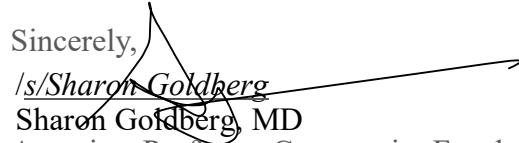
<sup>137</sup> Lai H, "Neurological Effects of Radiofrequency Electromagnetic Radiation," in Lin JC (ed.), *Advances in Electromagnetic Fields in Living Systems*, Vol. 1, pp. 17-88, NY: Plenum (1994).

<sup>138</sup> Taheri M, Mortazavi SMJ et al, "Evaluation of the Effect of Radiofrequency Radiation Emitted From Wi-Fi Router and Mobile Phone Simulator on the Antibacterial Susceptibility of Pathogenic Bacteria *Listeria monocytogenes* and *Escherichia coli*," *Dose-Response* 15(1), 1559325816688527 (2017).

The current FCC “guideline” is over 20 years old and considers only effects from tissue heating such as burn and shock. Clearly, burn and shock from wireless technologies are not the main safety concern at present. The “guideline” is also not applicable to the chronic 24/7 exposures we now see, as the guideline is limited to short term, 30-minute exposures only, making it medically and scientifically irrelevant.

Physicians and other key policymakers rely on the false belief that the FDA has adopted the FCC’s so-called “guideline” which ignores the abundant science demonstrating non-thermal harm. This current situation provides false assurance of the safety of RF exposures and allows the ongoing proliferation of toxic emissions without any health protective regulation of RF emissions. Furthermore, this false claim of safety creates health hazards for vulnerable populations such as children, pregnant women, and individuals with chronic illness.

American people deserve transparency on this important issue that has been deliberately confounded for too long. I thank you in advance for your attention to this important matter.

Sincerely,  
  
~~/s/Sharon Goldberg~~  
Sharon Goldberg, MD  
Associate Professor Community Faculty  
Department of Medicine  
University of New Mexico School of Medicine  
[sg@drsharongoldberg.com](mailto:sg@drsharongoldberg.com)



**J. Prashanthi Atluri, M.D.**

My Name is Prashanthi Atluri, I am board certified adult Cardiologist and my husband is an Emergency Medicine doctor. We live in a suburb of New Orleans, Louisiana. We have two daughters, now 14 and 9 years old. In addition to general Cardiology, I am trained in nuclear cardiology and ultrasound technology. In my field we respect informed consent, explaining pros and cons of procedures to patients, always apply ALARA principles and every necessary precaution to control and limit radiation exposure on new patients. We scrutinize all new technology, and patients are well informed about the new technology limitations and harms.

I am writing this declaration in support of the petitioners who are attempting to hold our federal government agencies, particularly the Food and Drug Administration (FDA), responsible for providing consumers, school administrators and local governments with accurate, scientifically correct and up to date information about radiofrequency radiation and its potential impact on human health, in the same way we inform our own patients. This lack of current, health-based standards based on the latest science has resulted in great harm to families like ours across the country.

My general knowledge on cell towers and health began a long time ago (mid 2000s) when people and media in India were talking about cancer clusters in affluent neighborhoods with numerous cell towers. I thought in the US we would have better regulations, and was hoping to see the same good governance happen in India, too. Little did I know I would be learning about the bias of the Federal Communications Commission (FCC), telecom corruption and the failures of our national health agencies while I am fighting desperately to keep my kids safe from the irresponsible placement of towers in my neighborhood, and trying to save my beautiful home and the safety of my neighbors.

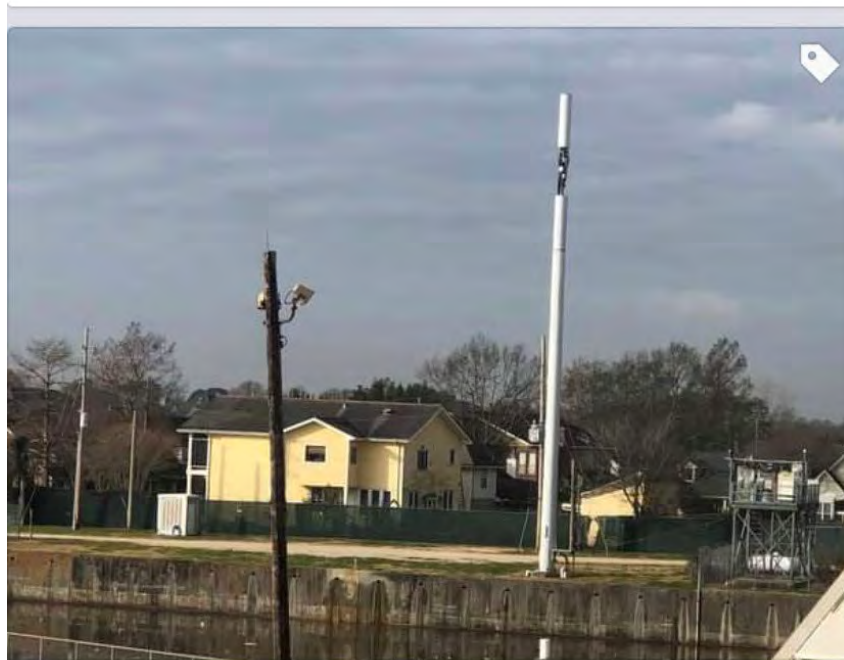
This is my story:

My older daughter had issues with attention, learning and focus at the age of five. We had her tested, and she was in speech therapy for two years. When she was later having issues with food sensitivities, I started researching why her food was causing her troubles. We learned a lot about food pollution, fake foods and chemicals in food that could be making her sick. We changed to a whole food plant based diet, and she felt better and overcame her learning issues in a year. I documented our healing journey in this blog post:

<https://www.wellcure.com/health-journeys/33/i-tackled-my-daughter-s-attention-deficit-hyperactivity-issues-by-going-back-to-natural-foods>

Fast forward to 2020, we lived at 30 Waverly Place, Metairie LA. Covid lockdowns began, kids were away from school at home doing virtual classes. While we were in our yard, I noticed a new, white tower that came up about 75 feet from my fence line. It wasn't there before! I hadn't seen it in the past. By the shape, it looked like a cellular tower. I didn't know who to ask, nor how to find out what it was (see the pic below). My daughter was spending a significant amount of time in her room to study (no laptop in her room), sleep or play. She started complaining of headaches, lack of proper sleep, thirst and dry mouth with disturbed sleep. Her headaches used to be so intense she would rub her base of the hands on her temples to a point,

after a few days, when we examined her we saw bald patches on her temple where she was putting pressure, and pressure spots on her base of her wrists. That's when we realized her headaches were severe, and my husband did a quick neuro eye exam on her. We didn't find anything ominous. We decided to get her checked by neurologist, get a CAT scan of her head in next few days. By then her school opened up, and she was no longer spending a lot of time in her room. Her headaches diminished. We started going to a farm to grow our own food on weekends and holidays. Gradually we forgot about the white tower, and we were making plans to move to the country in a year or two and settle there. At that time, I didn't connect her health issues with the white tower.

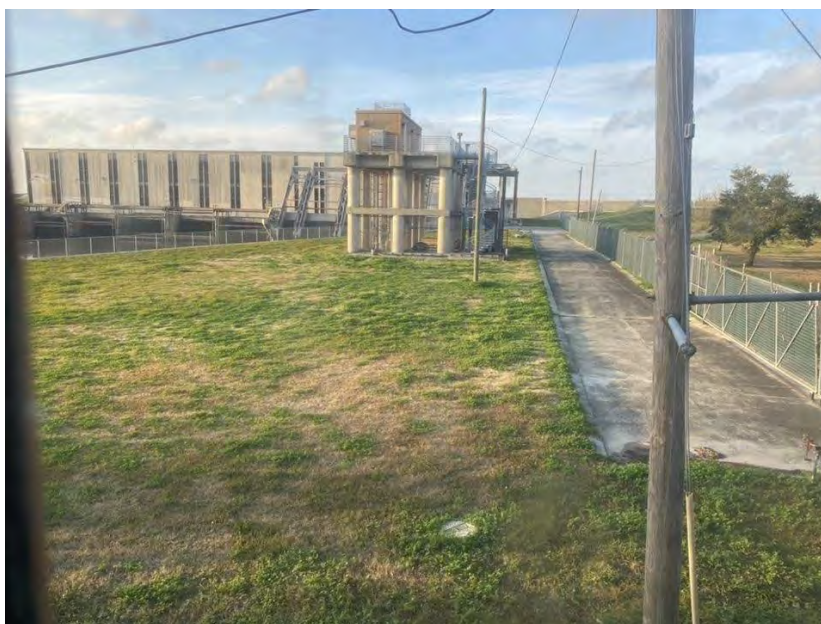


One cold winter evening (Jan 2021) a man came to our neighborhood knocking on our door; he said he was a contractor and he was informing us about a new proposal to build a cell tower (see the design below) 100 feet from my north side of my fence. None of the neighbors knew what to do. All they knew was that cell towers look ugly, and they didn't want any artificial constructions by the lake that would ruin the scenic bike pathways.

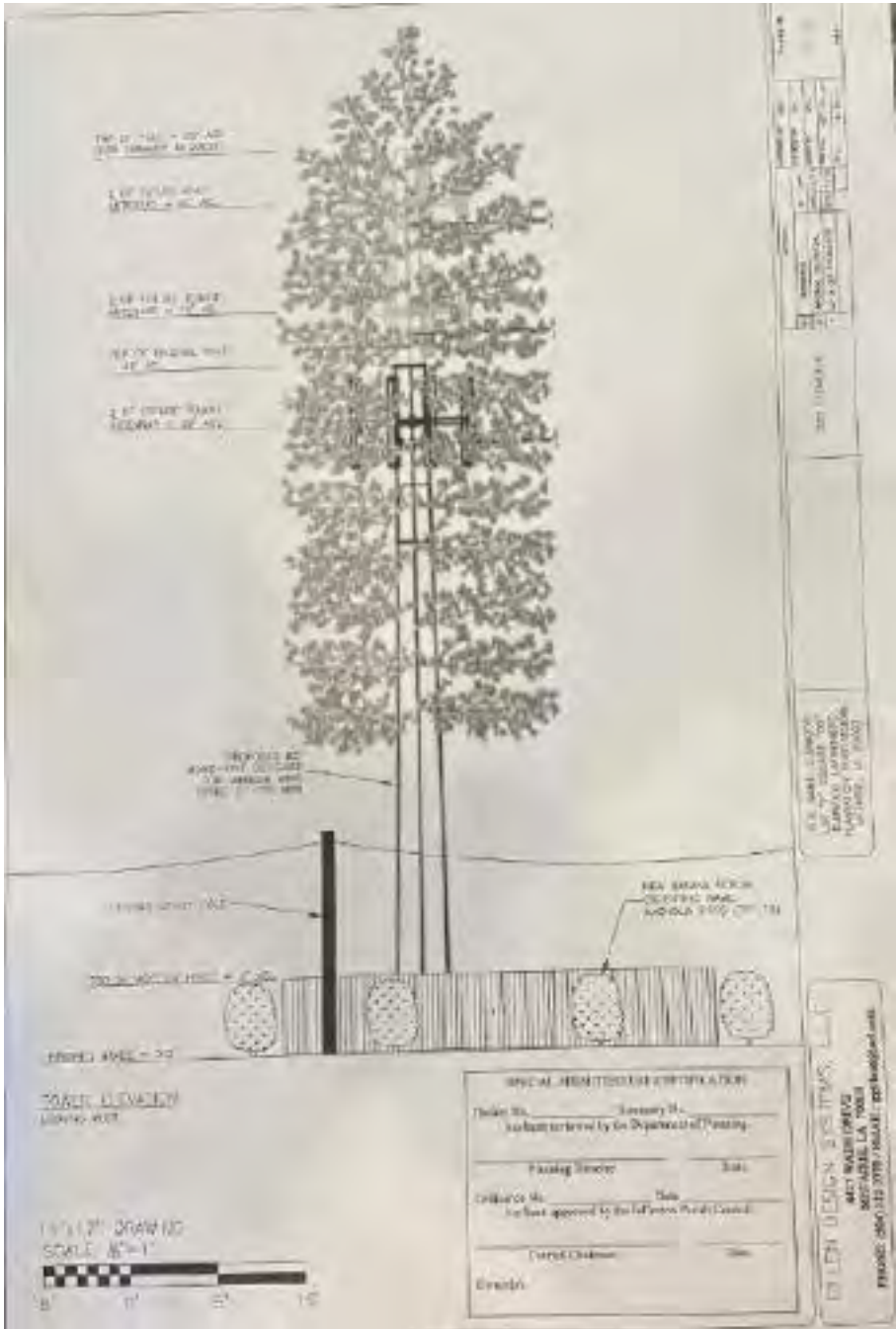
I started researching more to gain more knowledge of them, for example they were being called "cancer and sick towers" in India. I connected with 5G networks, many activists on social media and attended the [EMF Medical Conference 2021](#) to gain necessary info. That conference was an eye opener to me, and the disconnect we have in regular medical world, and how we are not up-to-date with the latest research on EHS, Wi-Fi sickness, and environmental issues, was glaring at me. I told myself I would be including radiofrequency and electro-hypersensitivity in history-taking on all my patients, to evaluate them, make proper diagnosis, and help them figure out why they are having issues like chest pains, palpitations, headaches, arrhythmias, skipped heartbeats and many more, that could be attributed to abnormal, manmade electromagnetic fields.

I bought a Safe and Sound meter to check on radiofrequency levels in my home and neighborhood surrounding the white cell tower. We hardwired our home, turned off all the Wi-Fi. My home measured *Extreme* in most of the rooms, and my teen daughter, who was sick with headaches during summer holidays, was the highest level. The majority of my neighborhood was *Extreme* and *High*. All around the white cell towers it measured *Extreme* values. One by one, everything started to make sense to me. *My teen daughter developed electro-hypersensitivity issues from that new installed white cell tower that was built in our neighborhood without our consent.* I also found out we had a new electrical smart meter installed (I wasn't paying attention to it until I learned about smart meters during my research) and that happens to be *right under my teen's bedroom!*

Proposed new cell tower site in Jan 2021 - 100 feet from my daughter's bedroom window.



Proposed new Cell tower design below:



My neighborhood came together to protest the new cell tower that was proposed just 100 feet from my daughter's bedroom. We went to a townhall meeting with our city representatives. We asked questions on health, property value declines, and aesthetics. The Contractor had no clue on cell tower emissions, monitoring of our neighborhood for emissions, and health concerns that many neighborhoods with cell towers were experiencing. We were outraged, and in the end, We won! The Contractor withdrew his proposal and left our neighborhood intact.

Email from city:



We won one battle, but the initial white cell tower that came up in March 2020 is still there. We tried our best to collect info on who it belongs to, and who to approach, as my neighborhood has extreme levels of RFR. There was no info regarding that cell tower with the city -- no owner, no apparent permits, NONE!

At that point, looking at all the health hazards of living in high RFR zones, we decided to move to a new neighborhood with minimal RFR levels. Our new place has no cellular reception inside the house, Wi-Fi is turned off, and whole house is hardwired. My daughter is doing better, her headaches, fatigue, irritability disappeared and her quality of sleep has improved a lot.

Wireless companies claim their antennas and other wireless equipment meet all Federal Communications Commission (FCC) exposure guidelines, and that may be true back then, but the guidelines themselves are almost 25 years out of date, and are not designed to protect children and individuals with pre-existing health issues. Cell towers don't belong in residential neighborhoods and schools with children. They are constant emitters of radiofrequency radiation and electromagnetic fields that create unnatural environmental exposure that needs more research and caution. Over the past several decades, independent researchers have published

thousands of peer reviewed scientific studies documenting serious adverse health impacts from exposure to wireless radiation, ranging from neurological and behavioral problems to cancers.

In 2013, the American Academy of Pediatrics (AAP) complained to the FCC (see <https://ehtrust.org/2013-american-academy-pediatrics-letter-fcc-outdated-radiofrequency-cell-phone-wireless-radiation-exposure-limits/>) that its exposure limits do not account for the unique physiological vulnerabilities of children, nor do they reflect current use patterns of wireless devices.

At this point, in looking at the corruption, irregularities and lawlessness of construction and maintenance of these cell towers, I want every citizen to be aware of the risks of this mindless use of newer technology that came out without adequate evidence of safety, and wish we would have more education on the risks of unwanted exposure, just like how careful we are with driving lessons to teens, and basic road safety instructions. Giving and selling a cell phone to anyone should come with pledge of care, responsibility and a easy-to-read safety manual. My wish is that we have more access to safer, responsible technology that is hardwired and proven safe.

I hope the telecom giants and FCC start to take responsibility for their actions, use some moral sense and apply ethics. I'm praying these cell towers disappear from neighborhoods, schools and playgrounds!

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/Prashanthi Atluri

Prashanthi Atluri, M.D.  
4909 Folse Drive  
Metairie LA 70006



## **K. Tahoe Stewards, LLC**

### **Declaration of Tahoe Stewards and Tahoe for Safer Tech: How Detrimental Reliance on Misleading and False Claims is Resulting in the Sacrifice of America's Historic National Heritage.**

This declaration is being submitted by Tahoe Stewards and Tahoe for Safer Tech, on behalf of over 4,000 community supporters who believe that irreparable harm is being caused by misinformation and disinformation being disseminated and promoted by wireless companies to convince citizens and local government officials that chronic exposure to radiofrequency radiation from cell towers is perfectly safe. This assertion is made, in part, based on claims by the Federal Communications Commission (FCC) that its so-called "safety guidelines" are based on corroborating evidence from the Food and Drug Administration (FDA). This is patently false, and is resulting in harm being caused to citizens across the country who find themselves in situations such as ours.

Tahoe Stewards, LLC is a not for profit foundation that was created to support environmental protections and to identify a vision of sustainability for Lake Tahoe and the surrounding areas.

On October 14, 2021, Tahoe Regional Planning Agency (TRPA) Hearings Officer Marsha Burch approved a controversial application for a 112-foot macro cell tower at 1360 Ski Run Boulevard, South Lake Tahoe. The proposed cell tower, located at the base of Heavenly Ski Resort in the middle of a residential neighborhood, has been vigorously opposed by hundreds of Tahoe residents over the past two years at public hearings before the City of South Lake Tahoe Planning Commission and City Council, before moving on to the TRPA for final permit approval. (The TRPA is the federal agency charged with protecting Lake Tahoe's environment.)

One day before the hearing, opponents of the tower permit submitted into the TRPA record thousands of pages of public comment, legal analysis, and peer-reviewed scientific studies on the environmental, health, and fire risks posed by macro cell towers such as the one (among many hundreds) proposed by Verizon in Tahoe's sensitive and federally protected ecological environment. The hazards to wildlife (including the bald eagle, deer, and at least one endangered species), as well as many RFR sensitive plants, presented by cell tower densification are likely to be irreversible and irrevocable.

The proposed tower will continuously bathe the surrounding residential community with up to 47,000 watts (47 kilowatts) of RF radiation. There is strong scientific and clinical evidence that anyone who is continuously exposed to 47 kilowatts of radiative power will likely become seriously ill. TRPA is not requiring Verizon to take accurate measurements of the dose effects, using available measurement equipment and protocols developed by members of the Congressionally authorized National Spectrum Management Association.

TRPA concedes that the Telecommunications Act of 1996 does not preempt the Interstate Compact as to environmental concerns, meaning TRPA recognizes that it has the power to regulate RFR emissions in the Lake Tahoe Region. But TRPA contends that the Agency and the

telecom providers get to decide how to “harmonize” their interests with the Public Trust established by Congress to protect Tahoe’s unique and fragile environment. Opponents disagree and point to Article VII of the Compact and the TRPA’s own Regional Plan, which explicitly require that TRPA prepare a Comprehensive Environmental Impact Statement (EIS) and analysis of the Wireless Tahoe Plan developed by a coalition of telecom companies and their lobbying arm, the Tahoe Prosperity Center.

TRPA and Verizon assert there is no problem with segmenting and piecemealing each tower permit decision, as illustrated in the recently approved Verizon macro cell tower application. Opponents contend that piecemealing, supported by arbitrary conclusions, violates the federal Administrative Procedure Act, as well as the recent decision on August 13, 2021 of the DC Circuit Court of Appeals in *Environmental Health Trust/Children’s Health Defense v. FCC*. In this decision, the federal Circuit Court ordered the FCC to evaluate thousands of recent scientific articles and commentary about serious detrimental health and environmental effects of wireless radiation from cell towers and wireless equipment, and to engage in a reasoned decision-making process to determine whether the FCC’s 1996 wireless radiation emissions standards need to be updated, based on the massive new evidence of linkages to harms documented in the past 25 years.

The Tahoe case illustrates how a single misleading and false claim can expand, compound, and cascade. The TRPA’s and Verizon’s counsel first wrongly assert that the FCC’s thermal standard is the basis for “harmonization.” Second, they assert and imply that the FCC’s thermal standard applies to environmental effects, which it clearly does not. Third, by implication they suggest that the FDA has endorsed this standard, when the FDA has no jurisdiction whatsoever on environmental harms. In this way a series of misleading and false statements acquire a life of their own. The victim in the tragic case of Lake Tahoe is the loss of a unique national treasure.

Respectfully submitted,

/s/ Ben Lebovitz

Ben Lebovitz

o/b/o Tahoe Stewards

Tahoe for Safer Tech



## **L. Warm Beach Neighbors for a Safe Community**

On behalf of Warm Beach Neighbors for a Safe Community, this declaration is submitted in support of the effort to hold the Federal Food and Drug Administration (FDA) accountable for establishing and promulgating a science-based standard for human exposure to radiofrequency radiation emanating from cell towers, antennas, smart meters and wireless devices of all kinds. Currently, the Federal Communications Commission, (FCC) is claiming – without evidence – that all such devices are “safe,” asserting that it has been so advised by the FDA. Since the FDA has established no safety standards, this cannot be true. The result is that local and state officials across the country are making decisions about exposure to radiofrequency radiation based on a false premise, and creating an imminent hazard for the citizens they are sworn to protect.

We are a community concerned primarily with a 150 foot, 12 antennae cell tower, with the potential for 24 more antennae, slated to be installed at the fire station in our rural community of Warm Beach, WA. This decision to grant the permit was made by the fire chief, John Cermak, and six elected commissioners, with no prior notice to the community, town employees and firefighters, or the Firefighters Union. The Union, the firefighters, and many members of the community have all been working to oppose this tower, to no avail.

Our top concerns are:

1. The permit cannot legally be denied on the basis of health concerns because the tower allegedly meets FCC “safety” standards, which FCC claims are based on input from the FDA. However, the FDA has no standard and no official policy! Proper testing was defunded years ago, and current testing only creates the illusion of safety. The FCC only looks at thermal standard, when there is much more that must be considered.
2. ALL firefighters in a study under these towers had brain damage, along with clinical symptoms, in a sworn affidavit. Similar studies have been published. The International Association of Firefighters is opposed to towers on or near fire stations.
3. At a 2019 U.S. Senate Hearing, telecommunication executives testified there are NO independent studies showing EMF exposure from 5G wireless technology is safe, and there are ample studies showing it is NOT safe. To believe that if it wasn't safe, a regulatory agency would step in, is in error. The telecommunications industry cannot even get liability insurance with regard to EMF exposure!
4. A handful of schools, including in Canada and California, have had to deactivate towers due to high numbers of children getting cancer and other serious illnesses directly correlating to the radiation from the tower.
5. The reach of the radiation is inconclusive, but some estimates are that it blankets more than three miles. Once this tower goes up in Warm Beach, hundreds of small towers will be set to go up in every neighborhood.
6. Radiation levels which meet current FCC limits have been proven dangerous by the FDA itself, yet the agency has failed to act. Health problems from high EMF levels are well

documented, exacerbated by the polarized pulsations of the radiation. Magnetic field exposure is also a major concern.

7. Fiber Optic to the Premises is a safer, reasonable alternative and should be prioritized.
8. We are deeply concerned that this tower will endanger the health of the firefighters and community residents, and impair the ability of firefighters to perform their jobs appropriately. Children, elderly, and those who are immune-compromised are particularly vulnerable. There is hard evidence that supports this and science is on our side. We believe those supporting this tower contract are operating on an assumption that the FCC and FDA have official policies stating that the RFR emission levels are safe, when there is no such official policy. Because of impaired performance due to RFR exposure, we are also concerned about the readiness of our firefighters. Firefighters in the state of CA sued on the basis of neurological damage and won; no towers are allowed to be erected fire stations in CA. Additionally, over 63 other cities have successfully banned these towers.
9. There are significant legal consequences, as there is a viable alternative supported with hard scientific evidence. We are concerned that the insurance provided by AT&T is grossly inadequate, and in fact the telecommunications industry cannot be insured for health and environmental damages caused by EMF exposure from their antennas and equipment.
10. We have offered public comment at many commissioners meetings, provided testimony at the public hearing, and met with the chief via Zoom and in person. We stated that the reliance on the thermal standard set by the FCC is in gross error, but our concerns have been dismissed. The law does not support the health and rights of the individual.

It is our belief that Chief Cermak and the commissioners have made a decision based on faulty safety standards, and that this decision will endanger the health of the firefighters and community residents, impair the ability of the firefighters to perform their jobs appropriately, and make North County Fire vulnerable to liability issues. They are operating on an assumption that federal agencies have examined the science and deemed it to be safe, when that is not the case at all. They have been effectively convinced that there is no other way to provide for the needs of the community other than allowing this dangerous technology. In spite of myriads of scientific studies proving otherwise, they cling to federal assurances that there is no possibility of harm, or that permitting harm is worth the benefits of providing a service that is their job to provide. In addition they have a duty to know and disclose the risks to the firefighters living there, and ensure that they understand the avoidable risk. They have not done so. Firefighters have not been given an opportunity to give their informed consent.

Submitted under penalty of perjury,

*/s/ Heather Andrus*

Heather Andrus

o/b/o Warm Beach Neighbors for a Safe Community

Warm Beach, WA



M. Eric Windheim



December 11, 2021

To Jennifer and Bud Andree:

The purpose of this report is to provide you with my opinion about the levels, dangers and recommendations of radio frequency radiation (RFR) present at the premises located at 9208 Daylily Court SE, Kirtland AFB, NM 87116 (the "Property"), **as a living example of the kinds of serious situations I face daily in my practice as a certified building biologist.** I am pleased to provide you with my **professional opinion** on the matter.

I must point out at the outset that none of these personal calamities would arise if the FDA were to clarify the present uncertainty relating to whether it has adopted RF safety standards. Many of my cases involve clients who are being left in a quandary on how to protect themselves, their families, employees, and neighbors. Their dilemma is a direct result of the belief and reliance by local authorities, personal physicians, school administrators, wireless providers, and others that the FDA, in contrast to the FCC, has in fact promulgated an official RF policy, when based on my research it has not. Indeed, the FDA is not only allowing such misinformation and disinformation to become endemic within the general public, it appears that it is actively encouraging it. In my view, widespread confusion and great personal suffering can be avoided if the FDA will simply clarify its official RF policy and regulations.

By way of background, I am a Building Biology Environmental Consultant (BBEC) and Electromagnetic Radiation Specialist (EMRS) having been trained and certified by the International Institute for Building Biology and Ecology since 2015: <https://buildingbiologyinstitute.org/>. In 2018 I completed the Radio Frequency Safety Officer Course (RFSO) accredited by the Institute of Electrical and Electronics Engineers, Inc. (IEEE). My experience includes consulting to detect, measure, and determine biological risk levels of property and to provide written assessments and reports with effective solutions to homeowners, developers, medical doctors, notable scientists, municipalities, firefighter unions, housing corporations and high tech semiconductor companies. Further, I have significant training in the use of precision instruments that measure all EMFs including radio frequency radiation (RFR), AC magnetic fields (mG), electric fields (EF), and dirty electricity (DE). Attached are my certifications, bio and background that provides a more detailed information about my education and experience.

I see clients in all stages of injury and health decline from EMF exposure ranging from mild headaches, fatigue, ringing in the ears to debilitating insomnia, acute cardiac problems, emergency hospital visits and delusional psychosis. Many clients experience instant, rapid or complete recovery when the EMF exposure is reduced or eliminated. I find that immediate reduction or avoidance of EMF exposure is the key to symptom relief and recovery. Once you

are traumatized by EMF exposure, health, both mental and physical, declines rapidly. Some clients never recover completely.

My education about the biological harm caused by EMF began in 2012 when I met and assisted dozens of people who had been harmed by so-called Smart electric and gas utility meters to testify at public Board meetings of the Sacramento Municipal Utility District, SMUD. Twenty-three of these people submitted written declarations of harm and injury sworn under penalty of perjury. Most of these Smart meter victims very in perfect health until, unbeknownst to them, the Smart meter was installed in close proximity to the bed they slept in. We convinced the SMUD Board & Staff to allow us to have the electromechanical Analog meters returned or retained and most of the victims stated that pain and suffering ceased immediately while others took weeks, months or even years to recover. Very sadly, some of these victims never recovered and amazingly are currently painfully traumatized by most forms of electricity found in the average home and our modern electrified society. Sweden recognizes this as a functional impairment or functional disability.

I began to notice a pattern of symptoms related to synergistic EMF exposure. The victims with the most intense symptoms and those whose symptoms did not stop with removal of the Smart meter had multiple EMF exposures including mG fields, EF fields and dirty electricity, DE. This fascinating observation lead to my 2013 decision, at age 60, to become trained and certified as a BBEC & EMRS.

I performed detailed EMF measurements of the Property on June 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup>, 2021. It was noted that there are two RF transmitting electric meters located on the exterior wall 1 foot from the pillow of the master bed. Both service entrance electric panels and both utility service laterals where at the same location: at the pillow of the master bed. In addition, there were two RF transmitting gas meters on a second bedroom wall about 20' distant which transmitted RFR at drastically higher power levels than the electric meters. To obtain a useful sampling of data I for mG, RFR and EFs I used currently calibrated GigahertzSolutions HF59B RF meters with the UBB27 antenna and the NFA1000 meter for datalogging of the RFR, mG and EF exposure. All of the findings are in my separate report for this property but I list the EMF exposure summary just below

1. Magnetic fields: Severe to 5X Extreme
2. Radio Frequency Radiation:
  - Electric Smart Meter pulses every 18 minutes: lower Severe,
  - Gas meter RF pulses every 4 hours: Extreme
3. Electric Fields: Severe
4. Dirty Electricity (DE): Severe to 3X Extreme

Comment: At bed pillow everything is Extreme except Electric fields which is Severe: symptoms are likely and could be expected sooner or later in all people. This is a synergistic exposure of all four EMFs.

It is well documented that the health consequences resulting from such significant multiple exposures include, but are not limited to mild to severe sleep problems, tinnitus, chronic

fatigue, headaches, concentration, memory, learning and immune system problems, heart palpitations, nausea, joint pain, swelling of face, neck, eye problems, rashes, and cancer. In this case, the levels of EMF measured are highly elevated and correlated to painful symptoms, neurological damage, disruption of hormones and deadly non contagious diseases.

Indeed, and as part of the scope of my work, I interviewed Mrs. Andree who told me that she was experiencing a number of these and other symptoms. She also told me that her health had so deteriorated that she was unable to reside at the Kirtland AFB Property. Further, the symptoms she identified for me were the same symptoms I noted above. Further still, Mrs. Andree told me that after she stopped residing at the Property, her symptoms greatly subsided but still persist at her new home in rural South Dakota.

Mr. & Mrs. Andree decided to buy a house in rural South Dakota for Mrs. Andree to live and recover in. I have visited, tested, assessed and remediated the house and Mrs. Andree reports that although she feels and sleeps much better than at Kirtland AFB she is far from recovered and has to sleep in the walkout basement with many electric circuits turned off at the panel.

In my opinion, my findings of multiple, synergistic and extremely high EMF exposure provide a clear explanation for the symptoms that were impossible for Mrs. Andree to avoid experiencing at the Kirtland AFB Property and her symptoms were a direct result of her exposure to the multiple Severe & Extreme levels of EMF. In Mrs. Andree's case, removing her from the triggering exposure was the only viable option.

Based on my background and experience, it is my professional opinion that:

1. The levels of multiple EMF exposure were highly toxic and hazardous.
2. The health symptoms reported by Mrs. Andree are consistent with the exposure to the Extreme levels of multiple EMFs. Peer reviewed studies worldwide show the same constellation of symptoms relative to these exposures. Close proximity to RF transmitting utility meters is very similar to close proximity to cell towers and studies show a high intensity of many neurobehavioral symptoms and distant proximity shows much less intensity and variety of symptoms. See Santini et al (France) in the attached exhibit #5).
3. The health symptoms reported by Mrs. Andree are directly and proximately related to her simultaneous, multiple exposure to the Severe and Extreme levels of EMFs at the Kirtland AFB Property.
4. It was impossible for Mrs. Andree to avoid experiencing her reported symptoms so long as she resided at the Kirtland AFB Property.

Mrs. Andree represented to me that she moved from the Property to a new location in rural South Dakota. It is my further professional opinion that Mrs. Andree had no recourse but to move and to remove herself from the hazardous levels of EMF exposure and that it was the only viable option for you. Please note that when a person is exposed to such an extreme and continuous dose of multiple EMF exposure within the home, there is very little hope of relief, much less recovery, as long as the exposure exists. The enormity of the EMF exposure at this

property makes it very reasonable that Mrs. Andree had no choice but to move out to a much safer, ultra-rural location.

The opinions expressed in this report and the referenced assessment report of the Kirtland AFB Property are made within a reasonable degree of professional certainty.

Observations on utilities, FCC, FDA, EPA, IEEE and ICNIRP: these are the controlling agencies and engineering organizations that are supposed to be protecting us from harmful levels of EMFs.

RFR Transmitting utility meters: Gas & Electric.

Most electric utilities published false promises of Smart meter safety stating that the “Smart meter meet all FCC safety guidelines, only sends radio signals SIX times per day and are less powerful than cell phones”.

Sworn utility testimony in court verifies that these exact same meters with exact same FCC ID Number actually transmitted 10,000, times per day, median count, and up to 190,000 times per day. How could they be so very wrong? All indications were that the Department of Energy (DOE) was responsible for the nationwide dissemination of the totally inaccurate and grossly negligent falsehood: or was it intentional deception or was it both? Electric utilities nationwide used the exact same verbiage: a sure indication of indoctrination from above.



Actual testing of SMUD Smart meters by SMUD staff, Frank Piscitelli, using a \$25,000 NARDA NBM-550 Broadband field meter, document that their Smart meters actually transmit at up to 240x more peak power than a flip cell phone, and 75x higher peak power than the Blackberry the SMUD staffer was using.

An elderly 78 year old female Holocaust survivor had 25 RFR transmitting Smart meters installed opposite her bedroom wall, and her testimony is documented here:

<https://youtu.be/2uMfx-FsJiE?t=2819>



Sacramento Ca.

Meter= NARDA Broadband Field Meter, 3 MHz – 18 GHz, Model # NBM-550  
Calibration good until 12/10/12.

Measurements are in mW/Cm2

Measurements at SMART Meter Panel

	Directly on SMART Meter	Duration of Ping	3' from SMART Meter	Duration of ping	7" from SMART Meter	Duration of Ping
Peak Power	.0601	324 ms	.0004	372 ms	.0069	584 ms
Peak Power	.0743	1,450ms	.0005	340 ms	.0066	1,599 ms
Peak Power	.0959	377 ms	.0006	345 ms	.0075	343 ms

Measurements inside Apartment

Location/Item	Reading	Duration Of Ping
Inside Closet Wall	.0016	341 ms
Inside Closet Wall	.0015	727 ms
Inside Closet Wall	.0009	638 ms
Blackberry cell phone	.0013	N/A
Motorola flip phone	.0004	N/A
Microwave Oven	.3309	1 minute

Performed 10/16/12

While it is becoming increasingly apparent that peak, pulsed and modulated EMF, and RFR in particular, is much more harmful, the FCC and controlling agencies rely upon 30-year old analog signal testing standards which are not pulsed or modulated.

FCC public safety guidelines rely on 30-minute RMS time averaging, which can reduce a very powerful but very short Smart meter RFR transmission which happens every 18 minutes or 4 hours, to absolute insignificance, even though the impact of these “spikes” can damage living tissue. This is like time averaging the impact of a hammer hitting a nail head, and averaging in all of the time the hammer was not actually touching the nail between hits.

The biggest, and most recent, failing of the FCC yet is the fact that they recently lost a federal court challenge. A historic decision in Federal Court this past August orders the FCC to explain why it ignored mountains of scientific evidence showing harm from wireless radiation. <https://ehtrust.org/in-historic-decision-federal-court-finds-fcc-failed-to-explain-why-it-ignored-scientific-evidence-showing-harm-from-wireless-radiation/>

While the USA has NO federal standards for AC magnetic field exposure, the IEEE recommends a public limit of 9,040 milliGauss (mG), and ICNIRP (a non-profit organization based in Germany whose conflicts of interest with the wireless industry are well-documented) recommends 2,000 mG for a public limit. There are independently funded, peer reviewed studies that show harms at levels 8,000x lower. See a few examples below:

- 16 mG Intermittent exposure to AC magnetic fields results in an 80% increased risk of miscarriage for pregnant women (Li et al 2002).
- $\geq 4$  mG A 560% increased risk of all major cancers in Danish children living near high voltage power lines (Olsen et al 1993).
- $\geq 3$  mG Children in remission from leukemia had a 450% increased risk of dying when recovering in homes with 3 mG or greater (Foliart 2006).
- 3 mG An 87% increased risk of hematological cancer in adults living near high voltage power lines (Youngson 1991).
- 2 mG Magnetic field exposure during pregnancy results in a 3.5 fold increased rate of asthma in children (Li et al 2011).
- $\geq 2$  mG A 710% increased risk of childhood leukemia in children under four years of age sleeping in 2 mG or above magnetic fields (Michaelis 1997).
- 1.9 mG A 70% increased risk of acute myeloid leukemia and chronic myeloid leukemia for adults living near high voltage power lines (Feychting 1994).
- $\geq 1.4$  mG A 570% increased risk of leukemia in children under six years of age than for children with exposure under 0.3 mG (Green 1999).
- $\geq 1.3$  mG A 200% increased risk of ADHD diagnosis in children living in homes  $\geq 1.3$  mG; a 338% increase when ADHD persists into adolescence (Li et al 2020).

My assessment report on the Andree residence at Kirtland AFB clearly shows that the pillow on the Andree master bed averaged 1.4 mG with peaks up 7 mG.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

*Eric Windheim*

Eric Windheim BA, BBEC, EMRS, RFSO  
Certified Building Biology Environmental Consultant  
Certified Electromagnetic Radiation Specialist  
Radio Frequency Safety Officer graduate  
Windheim EMF Solutions

September 16, 2021

**Exhibit 1:** Site View: Google maps, distance from XXX Marshall Heights Dr to towers is 450'.




**Exhibit 2:** In front of residence 500' from towers: 14,000  $\mu\text{W}/\text{m}^2$ ,  
14X Extreme Concern.



**Exhibit 3:** 400' or closer to the towers: >30,000  $\mu\text{W}/\text{m}^2$ , >30X Extreme Concern.



## Exhibit 4: Building Biology Precautionary Guidelines (SBM-2008)



**SAFE LIVING**  
Technologies Inc.

Creating Healthy Living Spaces

PO Box 72, Morriston, ON, Canada N0B 2C0 ▶ Tel 519.240.8735 Fax 519.821.5724  
support@slt.co ▶ [www.slt.co](http://www.slt.co)

### RADIOFREQUENCY / MICROWAVE EXPOSURE GUIDELINES

(High Frequency Electromagnetic Waves)

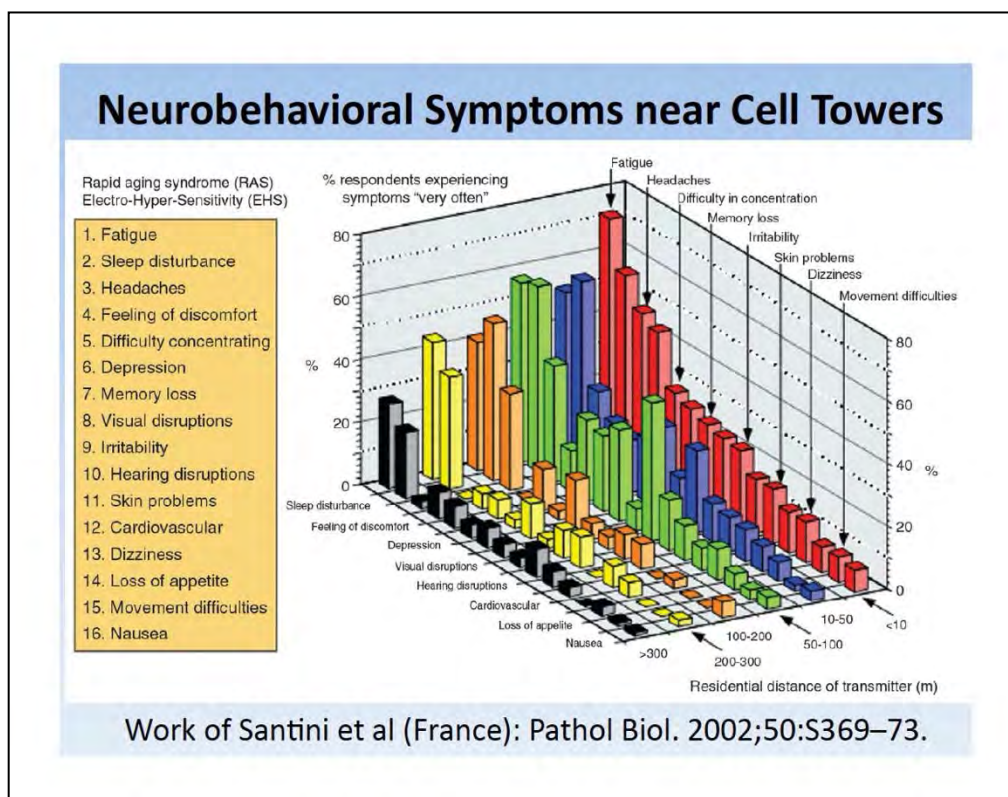
**1> BUILDING BIOLOGY PRECAUTIONARY GUIDELINES (SBM-2008) For Sleeping Areas**

Power density in microwatt	No Concern	Slight Concern	Severe Concern	Extreme Concern
per square meter $\mu\text{W}/\text{m}^2$	< 0.1	0.1-10	10 - 1000	> 1000
per square cm $\mu\text{W}/\text{cm}^2$	< 0.000,01	0.000,01 - 0.001	0.001 - 0.1	> 0.1

**2> BIOINITIATIVE REPORT PERCAUTIONARY GUIDELINES (2007)** [www.bioinitiative.org/](http://www.bioinitiative.org/)  
**Dr. Martin Blank - Columbia University**  
 Biologically Based Precautionary Levels 1,000  $\mu\text{W}/\text{m}^2$  or 0.1  $\mu\text{W}/\text{cm}^2$

**3> CANADA AND USA GOVERNMENT GUIDELINES (1999)**  
 In Canada, guidelines for Radio Frequency Wave exposure lay under the jurisdiction of Health Canada. Safety code 6 was developed in 1999 and offers federal guidelines for safe RF exposure levels. These limits are in the range of **2,000,000 to 10,000,000  $\mu\text{W}/\text{m}^2$  or 200 to 1000  $\mu\text{W}/\text{cm}^2$**  and are based solely on the short term thermal effects or the heating of body tissue. Adverse biological effects have been documented at levels far below Safety Code 6 guidelines. No Canadian biological exposure guidelines exist for long term exposure to low level Radio Frequency Radiation. This also holds true for the USA.

## Exhibit 5: Santini et al (France)





# Creating a Sleeping Sanctuary

## 5 Easy Steps to Create a Sleeping Sanctuary

- 1 Use battery clocks near bed.**  
Research has shown exposure to high magnetic fields while sleeping can cause severe long-term illness. Many electric clocks produce high magnetic fields.
- 2 Turn off bedroom-affecting circuits**  
A restful sleep is necessary for health and a strong immune system. Electric fields affect you bio-communications, keeping you from sleeping soundly.
- 3 Eliminate or shield from RF.**  
Radio frequency (RF) signals from portable phones, cell phones, and wireless devices have been shown to interfere with the body's immune system.
- 4 Use beds without metal.**  
Metal frames and metal box springs can amplify and distort the earth's natural magnetic field, which can lead to a non-restful sleep. Use natural materials.
- 5 Make sure there are no elevated magnetic fields.**  
Magnetic fields from appliances and building wiring can penetrate walls into a bedroom and disrupt the body's communication system.

For more information:  
**Institute for Building-Biology® & Ecology**  
Reference: *Sleeping Sanctuary* ~ v4

## Why do we need a sleeping sanctuary?

### *It's about Stress – and “de-stressing”*

The human body is an amazing, self-rejuvenating entity that has the ability to repair itself while it sleeps. This is accomplished with its own, internal electrical system that functions with very weak electrical impulses. Electrical impulses are generated by the brain and are used for intercellular communication. This is possible because the body is composed mainly of water with a high mineral content making it highly electrically conductive.

Cells know when to divide by vibrating. Brain cells, nerve cells, bone cells, all vibrate at different rates in order to communicate with one another. Unfortunately, our bodies act like tuning forks. When you vibrate a tuning fork (external electrical influence), any tuning fork (like our body) in its vicinity will start vibrating at the same frequency or rate, and therefore will be confused as to how fast to grow.<sup>1</sup>

In the typical sleeping area, electrical exposure from external sources (live electrical wiring in ceilings, walls and floors) is thousands of times stronger than the body's own electrical system. Long-term exposure to these high level electric fields can impair the body's ability to communicate within itself and impact health. The average person spends approximately 1/3 of their life sleeping. Doesn't it make sense to reduce exposure to electric fields in our sleeping areas?

Some people develop symptoms when they experience long-term exposure, especially at night, to elevated levels of electricity, such as: headaches, hyperactivity, nightmares, depression, fatigue, eyestrain, and muscle cramps.

Biological problems associated with electromagnetic stressors fall into two major categories<sup>2</sup>:

1. Brain (behavioral abnormalities, learning disabilities, altered bio-cycles and stress responses)
2. Growing tissue (embryos, genetics and cancer)

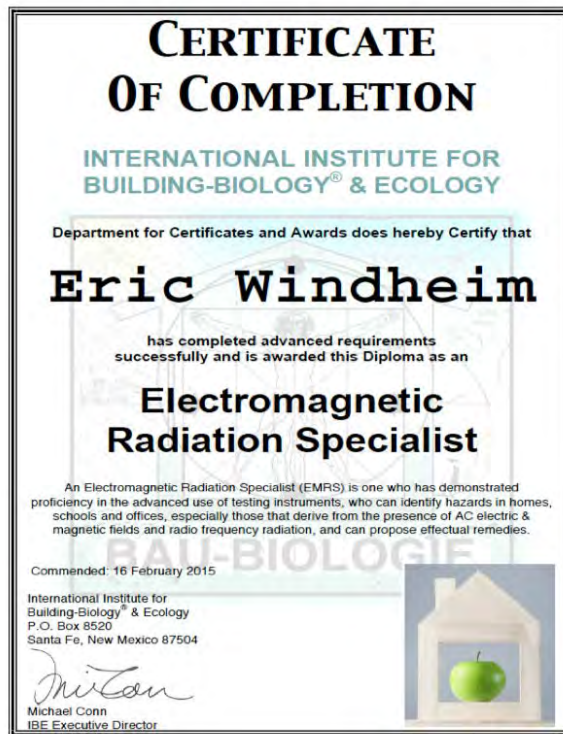
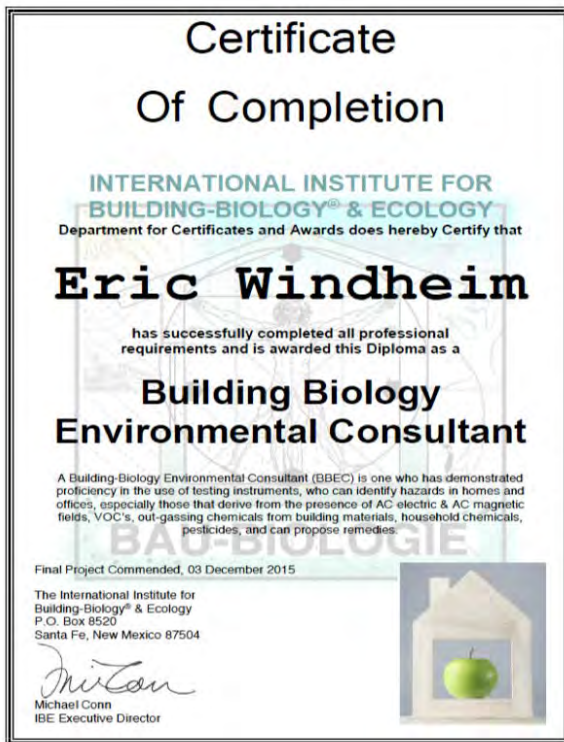
Research has shown that for a body to properly detoxify during sleep it must be alkaline, and high electromagnetic fields lead to acidity. This is especially true for heavy metal detoxification.<sup>3</sup>

<sup>1</sup> Oschman, James. *Energy Medicine*. London: Churchill Livingstone, 2000.

<sup>2</sup> Becker, Robert O. *Cross Currents*. New York: Penguin Group (USA) Inc., 1990.

<sup>3</sup> <http://www.klinghardt.org/docs/Heavy%20Metal%20Detox%20Clinical%20Pearls.pdf> [cited Feb 2007]

IBE is a non-profit organization dedicated to educating people regarding the biological impacts of homes and buildings  
P.O. Box 8520 • Santa Fe, New Mexico 87504 • 866.960.0333 • [www.buildingbiology.net](http://www.buildingbiology.net)



## CV of Eric Windheim

Eric Windheim is the owner of Windheim Environmental Solutions, a California high technology and environmental health and wellness company that he founded in 1991. The company is located in the Sacramento area with clients worldwide. Windheim EMF Solutions specializes in electromagnetic radiation and provides inspection, assessment, measurement, testing, abatement, and remediation of dangerous and unhealthy magnetic fields, electric fields, microwave radiation, and “dirty electricity.” Clients can feel better instantly when effective EMF solutions are enacted.

Windheim is a Certified Electromagnetic Radiation Specialist (EMRS). He is an expert in EMF inspection, detection, measurement, and prevention, and is certified to advise homeowners, homebuyers, architects, builders, inspectors, and engineers in the methods and practices that create and maintain a minimized presence of electromagnetic fields in homes and low-rise commercial buildings.

He is also a Certified Building Biology Environmental Consultant (BBEC). He has demonstrated proficiency in the use of testing instruments, and can identify hazards in homes and offices, especially those that derive from the presence of AC electric and AC magnetic fields, VOCs, out-gassing chemicals from building materials, household chemicals, and pesticides. He can propose solutions that provide a healthier indoor living environment that uses nature as its model.

**Education:** Windheim graduated from the University of California at Santa Barbara and has studied Environmental Science, Earth Science, Geography, Geology, Hydrology, Remote Satellite Photo Interpretation, and Advanced Solar Engineering.

**Professional Background:** Windheim specializes in EMF Assessment and Abatement, providing inspection, testing and remediation of microwave radiation, dirty electricity, and electric and magnetic fields. Prior to this he was the Director of Technical Services for the Sheet Metal and Air Conditioning Contractors National Association (SMACNA), Redwood Empire Chapter, providing education to HVAC contractors for California Title 24 Energy Regulation compliance. He worked for more than fourteen years in industrial machinery sales, residential and commercial solar energy system design, and sales with FAFCO Inc.

In June of 2012 Mr. Windheim founded and became Director of the [Sacramento Smart Meter Awareness](#) action group. In one year, without an attorney or funding, he and dedicated local leaders successfully prevailed against [Sacramento Municipal Utility District \(SMUD\)](#) in regaining the [safe and reliable Analog Meter option](#) for all Sacramento County/SMUD customers in order to restore health, safety, privacy, and accurate billing. This is a [national victory](#) with SMUD becoming the first municipal electric utility to allow customers to again use Analog Meters. Windheim is working with others nationwide to achieve the same results and available for speaking engagements, presentations on EMF safety and human health, and a film screening of Take Back Your Power for your group or organization.

2. **BBEC:** When I started my certification training with the International Institute For Building Biology & Ecology I focused on getting my [Electromagnetic Radiation Specialist, EMRS, certification](#). I completed that in February of 2015 and have been moving forward ever since.

I also wanted the additional training and certification on basic healthy building systems, remodeling, and air and water purification so I completed the curriculum and final project for BBEC, Building Biology Environmental Consultant in December of 2015.

Eighteen people have been fully certified by the Institute as both EMRS and BBEC since 1987.

Had my [parents](#) hired an EMRS or BBEC they could have detected and corrected problems that caused the Extreme Concern levels of dirty electricity and magnetic fields in their house. When was the last time your house had an EMF Risk Level Assessment? [Schedule](#) one soon and get the facts about your house.

3. **EMRS:** At this time there are only eight of us with this level of certification in the USA.

12 months, four certification seminars, 21 courses of study and 14,000 air miles latter I received my certificate as a Certified Electromagnetic Radiation Specialist (EMRS) in February of this year. Phew, I made it. It was a big and all consuming task but it paid off in the skills that I learned and the new friends I made along the way. I really never ever thought about going back to school at my age but this is so fascinating that it more fun than work. The study and book learning were very informative and the exams were confirming and rewarding but the special EMF testing techniques and protocols that I picked up from the IBE instructors really made the difference. [IBE instructors](#) made the biggest difference for me.

Although I was involved in electric power quality improvement for electrical efficiency in 2008 it was the [battle](#) we had with our electric utility, SMUD, that really motivated me. Once we won the foothold of being able to have the safe and reliable analog meter back I saw the need to become aware of all facets of EMF assessment and remediation because *biologically experimental smart meters* were not the only EMF dangers in the American home. The so-called *smart meter* just pushed people over the symptomatic threshold into the realm of hypersensitivity to all things electric.

I really get a thrill from hearing my clients rave about the great sleep they are getting since I converted their bedroom into an ultra low EMF sleep sanctuary. Never did any of their doctors or druggists provide them with such a sound and refreshing sleep but none of those came to give the house a check up for EMF or knew how to do EMF remediation. Duh!

The other really rewarding activity is working with my certified electrician friend [Dylan Lecair](#) when we correct wiring code violations that cause dangerous magnetic fields. Although we know there is a code violation from my initial magnetic field survey it can take us 3 hours to 2 days to find it and correct it. Recently we lowered a 10 mG magnetic field found on the pillows of the master bed to a very low and safe level of .25 mG. It is a real challenge; a lot of fun and clients feel better as the result!

I have found what I want to do for the rest of my life: I get paid for helping people avoid pain, suffering and family injury in their own home and I have fun while I am doing it! I hope and pray that I can do my best with what God gave me for a very long time to come.

4. **RFSO:** As a Building Biologist Environmental Consultant (BBEC), and Electromagnetic Radiation Specialists (EMRS), I am required to obtain Continuing Education Units (CEUs) every two years to continue my Healthy Building Environmental Learning Center (hbelc.org) certifications to stay current with rapidly evolving Science and Industry latest developments.

I recently completed the Radio Frequency Safety Officer (RFSO) Course through the Institute Of Electrical And Electronics Engineers (IEEE) Professional Development Class.

### **Course Highlights**

The course I took covers the way the FCC determines Safe Levels of RF Radiation, which considers only the thermal effect of RF radiation.

If it were not for my study of peer reviewed reports on biological damage caused by RF, case histories on communities that have cell towers, documenting biological RF radiation health damage and my own personal experience with my clients when the radiation is reduced or removed such as when a transmitting smart meter is removed I would certainly believe that there is no possibility of any harm until your body

### **Why I Took The Course**

I took the course was to get the “Inside View” of how engineers for wireless are educated and what they use as guidelines.

I felt the course was very informative, believable and helps me understand why government leaders believe that there is no harm unless your body actually heats up by greater than 1°C (1.8°F) from the RF radiation.

### **Final Thoughts**

The RFSO training was very compelling and explains the way RF Radiation heats the body but it acknowledges that non-thermal biological damage is uncertain (in the eyes of the IEEE and FCC).

## **XII. APPENDIX 3: Declarations from Individuals**

In this appendix are declarations from citizens whose lives have been altered because of their firm belief that exposures to supposedly safe RF emitted from devices and systems that they have used, or that have been in their environment, have caused them health, safety, and other quality of life-compromising challenges. In every case decision makers with authority are representing that the federal government (FCC and FDA) has promulgated official safety standards covering RF radiative emissions, when Petitioners and Declarants can find no credible evidence that such official FDA safety standards have in fact been formally adopted. The present state of regulatory uncertainty and ambiguity presents a risk of irreparable harm to these Declarants and many others and an Imminent Hazard to public health.

## **N. Ellen Marks**

My name is Ellen Marks. I am submitting this declaration in support of an effort to compel the Food and Drug Administration to create, promote and enforce up to date, scientifically-based guidelines for human exposure in regard to emf/rf emitting devices before more people suffer the fate of my husband, Alan Marks.

In May of 2008, my seemingly healthy 56 year-old husband Alan had a grand mal seizure and subsequent diagnosis of a brain tumor. About a week later Senator Ted Kennedy suffered the same fate. Our son had worked for the Senator in his private office. Our son was in touch with Kennedy's staff and they informed him that the Kennedys believed the Senator's cell phone use was the most likely cause of his brain tumor.

I was stunned as my husband was in real estate development and sales and always held his cell phone to his right ear, exactly where the tumor developed. He had started using a cell phone in the late 1980's. I began researching the connection and reached out to scientists worldwide; I sent them his cell phone records and medical records. They all responded stating that my husband's glioma was more likely than not the result of his cell phone use.

In September of 2008, I was contacted by Congressman Dennis Kucinich to testify at a Congressional hearing on Cell Phones and Health. The telecom industry trade group (CTIA) was asked to testify, but refused. A representative from the FCC, sitting next to me, did testify, and when asked why they had not changed their outdated obsolete guidelines since 1996, he responded that Congress had not instructed them to do so. He also stated they have no scientific expertise in this area; they defer to other government agencies. The result of that hearing was that Rep. Kucinich introduced a federal cell phone Right to Know bill, but it died without passing when he left office. I learned quickly that telecom lobbyists have great influence over our legislators and follow the tobacco industry playbook. I have since testified in many forums with industry officials, and watched and listened as they spread misinformation broadly.

In 2012 I went to Washington again and met with officials of the General Accounting Office (GAO) at their request. They had been asked by several legislators to investigate this issue. The GEO released its report a short while later, instructing the FCC to reassess their guidelines for human exposure to cell phones. The FCC eventually opened a formal Notice of Inquiry and received thousands of comments from experts and individuals harmed by their exposure to wireless radiation. The FCC ignored the comments in their entirety and in 2019 decided - arbitrarily and capriciously -to keep the outdated guidelines in place.

I have educated myself on the science and the so-called "safety testing" of cell phones for 13 years. There is an abundance of published, peer-reviewed science demonstrating the clear link between cell phone exposure and brain tumors (and other cancers). Since I began speaking out about this in an effort to save others from the horror my family endured, I have met many other families suffering the same fate. Many of the people I met are now deceased - some as young as 18 years old! The cell phone industry likes to claim that brain tumors are not on the rise. That is based on a very biased analysis of the data. Brain cancers are indeed on the rise, especially in younger persons.

My husband had his first craniotomy in June of 2008. He was fortunate, as his glioma was a grade 2. However, it affected his cognitive abilities and behavior greatly. As his neuropsychiatrist stated “this tumor set off a nuclear bomb in your living room.” This tumor, caused by exposure to his cell phone and a lack of proper oversight by the FDA, robbed me of my real husband and our 3 children of their real father. In 2020 his tumor returned and this time the doctors informed us it is terminal. He recently underwent another craniotomy and is not doing well.

My husband had no other exposures to radiation or other risk factors which might have been the primary cause of his brain tumors. There is excellent science proving the link, yet the FDA is ignoring its responsibility to research, develop, promulgate and enforce true science-based standards for exposure to wireless radiation for devices like cell phones, and instead, is permitting the FCC to maintain non-protective standards while it spreads mistruths to the public, shareholders and legislators.

In 2019 Dr. Jeffrey Shuren, director of the Center for Devices and Radiological Health at the FDA, responding to questions posed by Representative Anna Eshoo concerning radiofrequency radiation and health, furnished an unsigned, so-called “scientific review” which was neither scientific nor peer reviewed. The report read as though it was written by the cell phone industry. This bogus document, filled with only industry funded studies, appeared to appease Rep. Eshoo and other members of Congress, and their inquiry died.

I note that Dr. Shuren has a clear conflict of interest regarding wireless radiation (his wife is a lobbyist for AT&T) and the FDA and FCC have a long history of a revolving door with the telecom industry. Neither agency is actually protecting public health, and my husband and so many others are paying the price. They are considered to be collateral damage in industry’s attempt to hold off public scrutiny for as long as possible while the industry reaps unprecedented profits.

The current guidelines promoted by the FCC, which the commission claims are based in part on “advice” from the FDA, only take into account heating of tissues. Science has now proven conclusively that DNA damage (leading to cancer) is occurring below levels which cause heating. The public needs and deserves guidelines based on the truth- not on what helps telecom perpetuate their mistruths and pad their bottom dollar. Many cancers have long latency periods and children are sleeping with their phones on – basically using them 24/7. Children are most vulnerable to this exposure, but we may not see the impacts of their exposure for years or even decades.

My husband’s cancer from his cell phone has destroyed our lives. Another victim commented to me that “the only thing worse than dying from a brain tumor is living with one.” I agree. It is a horrific disease which affects the entire family.

I have worked endlessly to help cities and states adopt cell phone laws that require retailers to post advisories about the dangers of exposure at the point of sale. The public wants this, but the industry has used the courts to block any such laws. In Berkeley, CA the law

prevailed all the way to the Supreme Court of the United States. At the last moment the FCC joined in the case, stating they already have guidelines in place and therefore Berkeley's law was pre-empted. The Court agreed with the FCC, and once again, our government agencies kept the truth from the public, under the guise of already having provided "science-based" information. The plain fact is, the FDA/FCC guidelines are obsolete. They do not protect human health and are a disgrace and disservice to the American people.

I am not foolish enough to advocate against the use of cell phone use. This technology is here to stay. But we do need safer equipment (which I understand the telecom industry has already patented but not yet released), clear use instructions at the point of sale, and most importantly federal guidelines that truly protect human health.

Under penalty of perjury I submit this declaration.

*/s/Ellen Marks*

Ellen Marks



## **O. Jennifer Andree**

My name is Jennifer Andree, and I write this declaration in support of an effort to have the Federal Food and Drug Administration fulfill its responsibility to document and promulgate a set of health-based standards for electronic devices, including smart meters. The lack of science-based standards and consideration of effects of radiofrequency radiation at non-thermal levels has led to a series of events that has completely devastated my life, and the lives of countless other Americans.

I am a wife, mother, nurse, veteran and a victim of exposure to smart meter radio frequency (RF) radiation. My official diagnosis is “Overexposure to Microwave Radiation.” My husband Saniford and I and our son occupied a rental unit on a military installation where the smart meter RF exposure occurred. Saniford dedicated 30+ years of his life serving in the United States Air Force and continues to serve as a DOD civilian employee. I am making this declaration because I do not want others to suffer the catastrophic, disabling injuries I have sustained due to the lack of official health-based guidelines and regulations governing EMF/RF radiation emitting devices.

It is important to call to your attention to my diagnosis of “Overexposure to Microwave Radiation,” and highlight the fact that my symptoms and physical ailments parallel the “[Havana Syndrome](#).” I do not claim to be a victim of a microwave emitting weapon. I do claim and have documented evidence that the microwave radiation emitted by the smart meters opposite my bedroom wall caused my health deterioration and subsequent diagnosis of “Overexposure to Microwave Radiation,” which is also known as “Microwave Syndrome.”

Before my exposure to smart meter RF radiation, I was a very happy, healthy, active person, frequently traveling to see family and friends. I can no longer say these things about myself. I now live a very isolated life. For three and one half months, when I went to bed at night, my head was situated approximately one foot away on the other side of a wall from an electrical panel containing two electric smart meters. That regular nightly RF smart meter radiation exposure, the source of which I was unaware at the time, caused me horrific and disabling symptoms. Once I found out the source of my health problems, I immediately moved out of the bedroom, and eventually moved out of the rental unit; however, constant head and neck pain, dizziness, and episodes of vertigo are just a few of the symptoms that plagued me.

Due to the smart meter RF radiation exposure, I developed Extreme ElectroHypersensitivity (EHS) and Chemical Sensitivity. Anything that carries an electrical current or radiates EMF, including Wi-Fi, cell phones or other wireless devices, and fluorescent lights, just to name a few, causes an adverse reaction in my body. Headaches, brain fog, and internal burning are just a few of the symptoms I still suffer from. Smart meter RF radiation exposure devastated my health and has been catastrophically disabling to me and my daily life. I can no longer tolerate living in an urban environment, so I have moved to South Dakota, to a cleaner environment in the country. Because of the harms I was exposed to, I am separated from my family, which has contributed to my suffering.

My daily life is a constant navigation process. I have over half of the electricity shut off in my house to help provide a safer environment for me, but I still have to navigate where to walk, sit,

stand, and sleep to help prevent exposure. There is no Wi-Fi in my house. My phone and computer are hard-wired, but even the use of these devices cause me symptoms, so I must wear protective clothing and gloves, and restrict my use. You cannot imagine how difficult it is for me to go out in public. I avoid it as much as possible. I have a nursing license, but can no longer work in my profession.

My exposure occurred in privatized housing owned and operated by Kirtland Family Housing (KFH), on Kirtland Air Force Base (KAFB) in Albuquerque, New Mexico. When we signed our lease with KFH, it included 16 Addendums covering everything from lead-based paint to radon. Nothing was ever mentioned about smart meter RF radiation. There are approximately 30 houses on this base with the exact same design as our house with smart meters installed next to where people sleep. There are two electrical smart meters mounted on the outside of the master bedroom wall, and two gas smart meters inches away from an adjacent bedroom wall. This is a very dangerous situation for everyone who is living in these units. Clearly, based upon the investigation we had performed by a Certified Electromagnetic Radiation Specialist, I, as well as my family, was being bombarded the whole time for months with RF radiation by all four smart meters. Findings by the Certified Electromagnetic Radiation Specialist confirm:

At the master bed pillow, Radio Frequency Radiation from the electric smart meters measured 160 - 306  $\mu\text{W}/\text{m}^2$  (lower to mid SEVERE). The gas smart meters measured 1180 -1260  $\mu\text{W}/\text{m}^2$  (above EXTREME).

Based upon this report, one can conclude, approximately 30 families on KAFB are being exposed to the same levels of RF smart meter radiation. The primary rooms that are being exposed are ALL bedrooms where families sleep. Adults, children, and infants are being exposed.

Upon contacting the housing custodians, seeking their help concerning this health and safety incident, I informed them I had been sleeping near an electrical drop panel and two smart electrical meters, and informed them of my rapid health decline and sickness. I was met with obfuscation and dismissal. In December of 2020, a KFH representative wrote in an email to me that their gas and electric utility company, Minol, stated, "it's not the meters."

At this point in time, neither KFH nor Minol had ever sent anyone to investigate; yet their response was that "it's not the meters." I persistently pursued the housing custodians to investigate, and two and one half months after I first reported to them, they finally sent out an Industrial Hygienist who was ill-prepared to conduct a thorough investigation. He brought only one piece of equipment, a low-frequency magnetic field meter, thus only checked for that one factor. He did NOT check for RF smart meter radiation. At the conclusion of his investigation, he told me that I put my bed in the worst possible place, and then he explained to me that his findings were within acceptable public standards. The guidelines he used stating 2000 milliGauss did not apply to the source of what was making me sick, which was RFR exposure, not low-frequency magnetic fields. The "so-called" FCC guidelines nonetheless are outdated, not based on clear scientific research, and not based on official FDA policies, including its own report on RFR harms. This false claim thereby gave cover to KFH and KAFB to rely on the false premise that RFR levels radiating base housing were safe. This particular base is NOT the only one that

allows smart meters on the bedroom walls; it is likely that every military base in the U.S. has some housing which has this harmful radiation issue. Countless peoples' lives, health, and well-being are potentially being detrimentally affected.

My husband and I requested a meeting with the KAFB commander. As a "read ahead" document for our meeting, we gave the commander a letter from my doctor confirming my diagnosis of "Overexposure to Microwave Radiation." The letter also listed the timeline of all my symptoms, examinations, and supporting evidence of two RFR emitting wireless electrical meters on the other side of the master bedroom wall next to my bed, with significant pulsations detectable in the bed (to 6,400  $\mu\text{W}/\text{m}^2$ ). These readings were taken in my home by my doctor with a HF 59B meter for radio-frequency radiation (RFR). This was compelling evidence of a health and safety incident caused by smart meter RF radiation, and the base commander neglected to investigate the incident. Also, the commander declined to grant my husband and I a meeting. Failing to investigate and address a health and safety incident involving smart meter RF radiation that potentially is affecting other military members and their families can be a serious national security risk. The seriousness of this situation is evident and far reaching, and it all stems from the false claims of safety promulgated by the FCC and FDA.

I continue to suffer every day from the injuries I sustained from smart meter RF radiation. Internal burning, numbness, weakness, brain fog, cognition and memory difficulties are part of my everyday life. It has become painfully clear that companies and their custodians rely on these false claims as their protective shield, to the detriment of people's good health and well-being. Current guidelines concerning EMF/RF radiation are not adequate to protect humans and the environment, especially with the speed at which more and more wireless technology is being imposed on Americans, and the health risks and harms have been irresponsibly denied (it is obvious that the wireless industry know their products cause harm, yet still they carry on harming an unsuspecting public). I know how detrimental RF smart meter radiation exposure is; I live with the consequences every day of my life. Please, it is time to write, pass, and enforce laws that regulate the use of EMF/RF radiation emitting devices for the protection of people's good health and well-being and our environment.

Thank you for your time and consideration.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/Jennifer Andree

Jennifer Andree

67 South Riverview Dr.

Glenham, SD 57631



**P. Sally Jewell Coxe**

To Whom It May Concern:

My name is Sally Jewell Coxe. I submit this declaration in support of a legal effort to have the Food and Drug Administration (FDA) research, develop and promote health- and science-based human exposure standards for antennas and other devices that emit radiofrequency radiation (RFR), to publicly admit that it has never developed such standards and no such standards exist, and to do so expeditiously to prevent further harm to public health.

I am grateful for this opportunity to share my experience with RFR in the hope that the FDA, as well as the Federal Communications Commission (FCC) and other relevant agencies within the US government will take responsible and immediate action to protect the public from the mounting and ubiquitous dangers of this invisible contaminant. My life and my health have been severely impacted by prolonged exposure to high levels of RFR from cellular antennas on the roof of the building where I reside.

When I learned what was making me so ill – a constant bombardment of microwave radiation – and that the US government was failing to conduct the necessary research to understand its impact on human health and our environment, I was astonished. I wanted to believe that the government of the United States of America was truly “for the people” when it came to basic health and safety, but in this case, tragically and unconscionably, it appears that government action (or inaction) is being directed by big business—i.e., the telecom companies. What is worse, our own government agencies have turned a blind eye to a plethora of scientific and anecdotal evidence that already exists as to the detrimental effects of this radiation on human health<sup>139</sup>.

No insurance company – including Lloyds of London and Swiss Re, the two largest re-insurers in the world, nor any others – will insure purveyors of wireless technology against claims of harm to human health, ostensibly because they know that it is already making many people sick and the inevitable claims will be substantial. Meanwhile, the mega telecom corporations are racking up trillions of dollars and amassing unprecedented power and control. We all appreciate wireless technology and the conveniences it provides, but at what cost? Surely more informed regulation and scientific due diligence is warranted to mitigate harms to the health of those the technology is meant to serve.

---

<sup>139</sup> On August 13, 2021, the U.S. Court of Appeals for the District of Columbia Circuit delivered a consequential ruling in the case of Environmental Health Trust et al. v. the Federal Communications Commission (FCC). The court found that the FCC failed to explain why it ignored abundant scientific evidence showing harmful effects from wireless radiation and that the FCC violated the Administrative Procedure Act because the FCC’s decision not to update its 1996 exposure limits failed to address impacts of long-term exposure to RF radiation, the unique impacts to children, the testimony of people injured by wireless radiation, the impacts to wildlife and the environment, and impacts to the developing brain and reproduction, as well as technological developments that have occurred since the Commission last updated its guidelines, among other issues. See <https://ehtrust.org/in-historic-decision-federal-court-finds-fcc-failed-to-explain-why-it-ignored-scientific-evidence-showing-harm-from-wireless-radiation/#:~:text=The%20Court%20ruled%20that%20the%20FCC%20must%20%E2%80%9Cprovide%20a%20reasoned,cellphones%20and%20other%20wireless%20devices.>

I have lived and worked in my apartment at 2701 Connecticut Avenue NW, Apt #702, Washington DC 20008 for the past thirty years, since December 31, 1991. My apartment is on the top floor of an historic, century-old building, now owned by Alonzo Bliss & Co. and managed by WC Smith & Co. Beginning in the mid-1990s, an increasing array of cell phone antennas has been installed on the roof. Now, there are six (6) installations, each with multiple antennas, belonging to Verizon and T-Mobile. (See Figures 1-3.)



Figure 1



Figure 2



Figure 3

Not only has my apartment been my cherished home for half my life, it has also served as the headquarters and logistical hub of the international non-profit organization I co-founded in 1998, the Bonobo Conservation Initiative (BCI). Our mission is to protect the endangered bonobo and its habitat in the heart of the Congo rainforest. Bonobos are humankind's closest great ape relatives, sharing more than 98% of our DNA. I first learned about bonobos while working as a copywriter at National Geographic. Since then, protecting them has become my passion and my life's work. Distinguished by their peaceful, matriarchal society, their remarkable intelligence, and their free-loving nature, bonobos have a great deal to teach us humans about ourselves and our own origins. The last apes to be discovered by modern science, these exceptional primates have been revered for generations by indigenous people of the Congo; they serve as a powerful flagship to protect vast areas of rainforest.

Working with indigenous communities and the government of the Democratic Republic of Congo, BCI has helped to establish legal protection for nine million acres of rainforest to date in the Bonobo Peace Forest. This forest sequesters billions of tons of carbon and provides essential ecosystem services the whole world needs to mitigate climate change and ensure our own survival. See [www.bonobo.org](http://www.bonobo.org).

While the existential threat of climate change is finally being addressed by the world at large, I now find myself in the middle of another “inconvenient truth” — the fact that the wireless technology upon which we have come to depend can be toxic to the health of humans and our environment.

### **Sequence of events and health impacts**

- Since the mid 1990s, more and more cell phone antennas have been installed on the roof of the building where I have lived for many years. In the past decade or so, more antennas have been placed in closer proximity to my apartment on the top floor of the building. The roof deck used to be a wonderful sanctuary, a place to relax with friends, with great 360-degree views of Washington. It was one of the main reasons I decided to

move into the building. Now, the views are ruined with so many antennas, which have also made the roof deck an unpleasant and dangerous environment.

- Over the past several years, I have experienced adverse health symptoms that I now know were clearly caused or exacerbated by exposure to inordinately high levels of RFR from the cell phone towers on the roof of my building.
- Some of the symptoms began previously but got much worse in 2019. I began to experience extreme fatigue, low energy, and cognitive problems: brain fog, difficulty concentrating, and memory impairment.
- I had trouble with my eyes—intermittent twitching, burning, vision problems and a blocked tear duct in my left eye.
- My hair started falling out and in the spring of 2019, I suffered a serious hormonal imbalance, which necessitated exploratory OB/GYN surgery. Thankfully, no cancer was found.
- I also had unusual rashes, including one on my back that has persisted since July 2018. The dermatologist did not know what it was nor what caused it.
- More and more, I experienced an overall jittery, anxious feeling. I got headaches more often than usual. My sleep was irregular and I began to exhibit symptoms of depression.
- I thought that some of these problems might be due to stress and perhaps I was “burned out.” I am normally a very energetic person. I have never experienced such feelings of total exhaustion in my life.
- In May 2019, BCI held major events in New York City in honor of our 20<sup>th</sup> anniversary: a press conference at the United Nations announcing the Democratic Republic of Congo’s endorsement of the Bonobo Peace Forest, and a gala event featuring actress Ashley Judd and renowned activist Gloria Steinem. Despite the excitement and importance of these landmark events, I struggled to keep up as my energy levels were so low and I had an overall feeling of “dis-ease” or discomfort.
- Toward the end of August/early September 2019, my symptoms became even more acute. At this point, I could not work on the computer without feeling ill. I also got nauseated and felt “zapped” in the head when in my apartment. I felt a numbness and tingling on the left side of my face and head when working at my desk—the side just next to the outside wall and window. These symptoms would abate somewhat if I got away from the radiation by going outside, especially around nature.
- Why did my symptoms escalate at this time? Likely reasons: a) Two cranes from Verizon and T-Mobile came in July and August 2019 to replace or upgrade the cellular antennae on our roof, in preparation for 5G. This could have increased the level of radiation exposure in my apartment. b) I had an eye surgery for a blocked tear duct on August 23, 2019 with general anesthesia. According to medical reports, head trauma can bring on or exacerbate electrohypersensitivity (EHS), especially if a person has experienced prolonged or high levels of RFR exposure. c) During 2019, cell phone antennas were installed on the building across the street, 2700 Connecticut Avenue, one of which points directly at my apartment.

- I talked with an old friend and described my symptoms. She thought perhaps I was being affected by EMFs. On September 8, 2019, she came over with a sophisticated EMF/RFR meter (Gigahertz Solutions HF 35C HF-Analyser) that measures non-ionizing radiation, i.e., Powerflux Density, in microwatts per square meter. The moment she turned on the meter, she exclaimed, “my God, you are living in a microwave!”
- We discovered that my apartment had exceedingly high levels of RFR, in some places beyond what the meter would measure (including my office, where I spend most of my time). My next-door neighbor joined us. We measured her apartment, which had much lower radiation levels than mine (about ¼). We discovered that the hallway on the top floor had high levels, the roof was so high it was beyond what the meter would measure, but in a first-floor apartment on the side of the building with only one antenna, the levels were much lower and near the safe range.
- The next day, September 9, 2019, I reported this to the Property Management at WC Smith. At that point, WC Smith was immediately responsive and understood that I needed to evacuate the apartment immediately. I spent 2 weeks in hotels in Washington at first, thankfully arranged by WC Smith.
- I began to research the problem and to alert other neighbors in the building, working in tandem with WC Smith.

## **Building Inspections**

The first action taken by WC Smith was to set up an inspection performed by Site Safe on September 20, 2019. This assessment was actually arranged (and possibly paid for) by Verizon and/or T-Mobile. Their report only measured frequencies and thermal effects of microwave radiation, as per the current FCC guidelines. It was at this time that we learned that the FCC guidelines for RFR exposure are 25 years old—they have not been updated since 1996! They do not take into account the non-ionizing radiation, which many scientific studies show causes health problems in humans and other living things, including cancer, mitochondrial damage, and cognitive problems. The Site Safe report denied any danger and claimed that the antennae and resulting radiation are compliant with FCC standards.

When tenants learned that the Site Safe inspection had been arranged by Verizon, they complained and requested an independent assessment. WC Smith arranged another inspection by Washington Labs on October 8, 2019. Their report, although more extensive, basically corroborated that of Site Safe, and only measured frequencies in relation to the outdated FCC standards.

In an effort to get a more thorough and honest third-party assessment of the radiation affecting myself and other tenants, I arranged for an inspection by Ray Pealer of EMR Safety Consulting, which took place on October 9, 2019. Some other tenants on the upper floors participated and representatives of WC Smith were present. During the inspection, Mr. Pealer provided background and shared scientific reports about the dangerous health effects of non-ionizing radiation from cell phone antennas. He also discussed shielding options to reduce radiation within apartments in the building. The [EMR Safety Consulting report](#) confirmed that the antennas on the roof are exposing residents to extremely high and dangerous levels of RFR and

that some apartments are more affected than others—with my apartment and one other on the top floor receiving by far the highest levels—greater by orders of magnitude, due to their proximity and placement in relation to the antennas.

The EMR Safety Consulting report was distributed to WC Smith and a group of concerned tenants. Despite our requests that WC Smith inform all tenants in the building, this was not done. One tenant, who has lived on the sixth floor for many years, in the tier beneath the highest concentration of antennas, had been experiencing fatigue and thyroid issues. **He shared the EMR Safety Consulting report with his endocrinologist, who immediately ordered a sonogram and discovered that he had thyroid cancer.** He had his thyroid gland removed in December 2019 and continues to undergo treatment.

### **Health Impacts: Medical Diagnosis and Mitigation**

I had little to no knowledge about the health effects of RFR until this all came to light in September 2019. Upon this discovery, I began intensive research and networking to learn about the health effects and how to ameliorate my symptoms. In October, I traveled to California for a wildlife conservation conference. Since I could not live in my apartment without getting ill, I arranged to stay with a long-time friend and benefactor, Lori Grace, at her house in Tiburon, CA as I tried to heal and get a handle on the problem.

In California, I was referred to Dr. Toril Jelter who is an expert in EMF/RFR related illness. She diagnosed me with Microwave Radiation Syndrome and Electrohypersensitivity (EHS). She advised me that the first most important thing to ameliorate the symptoms was to live away from radiation and if that was not possible to shield my living space and to reduce or eliminate exposure to non-ionizing radiation (i.e., RFR and EMF) as much as possible.

Beyond that, she provided a number of recommendations including antioxidant supplements and treatments to counteract the oxidative stress caused by microwave radiation. She advised me to engage an Integrative/Functional Medicine Doctor to identify metabolic dysfunction, oxidative stress, imbalances, and deficiencies and to treat them. She recommended that I spend at least one hour each morning doing physical grounding, exercise, and meditation to relieve symptoms and balance the limbic system, which goes into a “fight or flight” mode from the toxic radiation. She also advised me to have dental metal (i.e., metal fillings, crowns) removed by a specialist and replaced with non-metallic materials. She told me that I would probably need some regenerative therapies to help build up more resilience and to reduce the sensitivity, which even under optimal conditions can take up to 2 years.

This all happened at a pivotal time for my non-profit organization when we were developing new sources of funding and gearing up for a new phase of our work. During that time, I was distraught, still experiencing adverse health symptoms, and so sensitive to the computer, Wi-Fi, and my cellphone that I found it very difficult to work. This had real and consequential opportunity costs to my organization and funding proposals that were in progress at the time with USAID and large foundations because I was not able to effectively manage the work, due to this bizarre illness.

## **I have become a human antenna!**

It is hard to describe what it feels like and what happens when you are electro-sensitive, as I have become—not to mention the fact that this condition affects multiple systems in the body, so it is hard to get a handle on it. While in California and up to now I cannot ride in an electric car without instantly getting a headache and nauseous. I experience similar symptoms in other contemporary vehicles with Wi-Fi and built-in GPS, and in offices and areas with high EMF or RFR. In other words, not only is this disabling condition affecting my livelihood and ability to work, but practically all areas of life.

It became clear that the only way I could re-enter my apartment—even long enough to move out—would be to shield it to reduce the radiation. I consulted Ray Pealer, the building biologist, who recommended using shielding paint and clear window film. His estimate was \$8,000 for this work. This was rejected by WC Smith and they forbade the use of the shielding paint. My only recourse was to shield the apartment myself, using heavy duty aluminum and window screens. I had to hire labor to do this work and the WC Smith custodians also pitched in after hours.

I also had to purchase a protective bed canopy woven with silver fibers, which cost \$2,000. Despite the exorbitant cost, this made all the difference and is the one place in the apartment that is truly an oasis of relief. Building biologists and medical experts advise that it is extremely important to sleep in a radiation-free area. With good sleep, the body produces melatonin, which acts as a powerful anti-oxidant that helps to recover from the effects of the RFR and strengthen resilience. I hired a technician to hard-wire my internet and eliminate Wi-Fi in the apartment. I purchased shielding clothing—a hoodie, pants, and lap blanket—to help mitigate the effects so that I could be out in the apartment.

I was able to partially shield my large two-bedroom apartment – most ceilings and outside walls – and screens over the windows. All of these measures have cost thousands of dollars and still the radiation in the apartment is too high to be comfortable or safe. It has also destroyed the aesthetics of my once beautiful apartment. It's like living in a tin can with aluminum all over the place.

It became clear that either the antennas would have to go, WC Smith would agree to provide better shielding, or I would have to move out. We were negotiating how to work it out when the Covid 19 pandemic hit. This further complicated matters.

I was able to arrange temporary lodging with family in my hometown of Asheville, NC, where I stayed during the lockdown in 2020. I was able to start getting work back on track. Since then, I have continued to seek medical advice from experts familiar with RFR illness. I found that most physicians are not even aware of it. I have consulted with Dr. Elizabeth Seymour of the Environmental Health Center of North Texas, which offers comprehensive integral medical services for EHS/microwave illness. Because treatment is an iterative process, depending on test results, she provided a reasonable estimate of the kinds of tests and treatments for people with my condition. Treatment usually takes at least two years and can run up to \$15,000.

I have also consulted with Dr. Sharon Goldberg, Internal Physician, who is an expert on Microwave Radiation Illness. Highly recommended, Dr. Goldberg organized the recent EMF Medical Conference (<http://conference2021.com>) and she has also testified before US Congress about this public health issue. I have continued to consult with Dr. Goldberg regularly. Dr. Goldberg has advised me on ways to ameliorate my condition and to create a safe living environment where I can heal, until I am able to pursue comprehensive treatment. Integrative medical services are not covered by my health insurance policy. As of now, I have not been able to afford specialized medical care and have paid out of pocket for consultations so far.

The proper testing will elucidate what further treatment is needed and if I have any other serious conditions beyond what is already known. RFR is proven to be cancerous and to cause cellular and cognitive damage. I have never been more concerned about my health.

### **Disruption and Damages**

In October 2020, I went back to Washington, thinking that I would try to shield the apartment better and see if I could hold out a few more months while trying to work out solutions and raise funds to move. Within 15 minutes of being in the apartment, my entire face went numb and I realized that I really had to move out ASAP. I found a place to rent in Asheville in a rural setting, and sort of camped out there until I was finally able to arrange for movers, which was also a very expensive and exhausting enterprise. In addition to my apartment, I have rented two storage rooms in the building for myself and all of BCI's files and field equipment. Pulling up stakes after thirty years is no easy feat.

As of this moment, I am still holding out hope that WC Smith will do the right thing and stand up for the health of its tenants—and do right by me. Earlier this year, T-Mobile was preparing to install 5G on the roof. Due to ongoing concerns from tenants, WC Smith asked T-Mobile to wait on the 5G, at least until the pandemic had subsided. T-Mobile threatened to sue WC Smith for breach of contract, and the 5G equipment was installed at the end of March 2021. Since then, when I have been in the apartment, I experience extreme tinnitus – a very high pitched sound that is unnerving.

On November 3, 2021, additional measurements were conducted by Cardinal Communications using a large inventory of calibrated antennas and spectrum analyzers, which were operated by a professional radio site testing analyst. A report was subsequently issued December 19, 2021. Measurements revealed that according to Crest Factor analysis, the emissions routinely spike to 132-to-264% beyond the FCC Human RF exposure standard. Other very concerning data revealed that (i) Human RF exposure standards may be further impacted, and (ii) industry mobile telephone usage Specific Absorption Rate (SAR) guidelines may also be distorted, especially when people bring their mobile telephones to the rooftop terrace. [See ATTACHMENT 1]. Relatedly, the IEEE Microwave Magazine for January 2022 includes an article *Health Safety Guidelines and 5G Wireless Radiation* that validates that material gaps exist in studies across the

full range of wireless mobile bands and that there are “significant anomalies” in recently updated safety recommendations.<sup>140</sup>

I have appealed to WC Smith for “reasonable accommodation” as permitted by the Americans with Disabilities Act (ADA) and the Fair Housing Amendments Act (FHAA), but my requests have been denied. WC Smith and the telecom companies continue to rely on the false and outdated FCC standards as justification to avoid compliance.

My life, my health, and my organization’s mission have all been severely damaged as a result of extremely high and prolonged exposure to RF radiation from the cell phone towers on the roof above my apartment. My requests to WC Smith for reasonable accommodation to provide safe living conditions and to ameliorate my injuries have not yet been honored—nor have requests from other tenants to address the problem, which also puts them at risk. Now more than two years after the problem came to light, I am still suffering from considerable financial losses and debilitating health issues. Up to now, I have not received the consideration and remuneration required to even begin to recover from these losses and the damages to my health, nor to cover the costs of moving to a new location.

The bottom line is: cell phone antennas should not be placed so close to human habitation! Having multiple cell phone tower installations right over our heads on a 100-year old building, just a few feet overhead, is extremely dangerous. It is proven that the magnitude of microwave radiation decreases with distance. No matter how convenient, or how much money can be made by renting space to telecom companies, it is not worth it because it is jeopardizing the health of people in close proximity. I am urgently calling on the FDA to do its job and please put reasonable safety standards on this health hazard before many more people become seriously ill or die from the exposures.

I hope that my experience can help to shed light on this growing problem and help others who are suffering from RFR exposure. A clarification of the FDA policy will contribute significantly to ameliorating my situation, and that of thousands of other tenants and real estate managers across the country.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

---

<sup>140</sup> IEEE Microwave Magazine: For the Microwave & Wireless Engineer, Volume 23, Number 1, January 2022. *Health Safety Guidelines and 5G Wireless Radiation*, by Dr. James C. Lin. <https://ieeexplore.ieee.org/document/9632507>

Dr. Lin is Professor Emeritus in the Department of Electrical and Computer Engineering at the University of Illinois Chicago. He is an expert on the biological interactions of wireless radiation. He is a fellow of the American Association for the Advancement of Science and the Institute of Electrical and Electronics Engineers (IEEE). Since 2006 he has been the Editor-in-Chief of the [Bioelectromagnetics journal](#) published on behalf of the [Bioelectromagnetics Society](#) (BEMS), an international organization of biological and physical scientists, physicians and engineers.

/s/ Sally Jewell Coxe

Sally J. Coxe  
2701 Connecticut Avenue NW #702  
Washington, DC 20008  
(202) 441-1599

November 16, 2021

## ATTACHMENT 1

RF Exposure Analysis: 2701 Connecticut Avenue, NW, Washington, DC  
Cardinal Communications, a Division of Thought Delivery Systems, Inc.  
for THE BALANCE GROUP

Version: 12/19/2021, 8:20pm

SUBJECT: EXECUTIVE SUMMARY: HUMAN RF EXPOSURE ANALYSIS

LOCATION: 2701 Connecticut Avenue, NW, Washington, DC



### **Overview:**

A detailed radio frequency (RF) emission field study was conducted on November 3, 2021 at 2701 Connecticut Avenue, NW, Washington, DC. Mobile network base stations are operating on and near the premises.

Insufficient Prior Studies: Previous Human RF exposure studies conducted at this location by carriers and also by private entities were reviewed. These studies appeared to not conduct and/or report measurements in critical tenant-accessible locations, nor to utilize calibrated instrumentation capable of measuring all the necessary cumulative emissions, nor to assess other aspects of RF emissions present.

FCC Human RF Exposure Standard Exceeded: Using very conservative measurements and analysis, the Federal Communications Commission (FCC) Human RF exposure standard appears to be regularly exceeded in the publicly accessible rooftop terrace area by a factor of at least 132.31% of the appropriate maximum FCC value when accounting for a mitigated Crest Factor.

- Approximately 43.23% of the FCC Human RF public standard was measured *without* accounting for mobile phone operations, especially SPECIFIC ABSORPTION RATE (SAR) and *without* accounting for any CREST FACTORS and *without* measuring all the radiation impacting the premises using ADDITIONAL EQUIPMENT.<sup>1</sup>

---

<sup>1</sup> For example, both spectrum analyzers detected a very strong approximately 660 MHz signal, using an AARONIA Omnilog Model 735 (700MHz-to-2.5 GHz uncalibrated whip antenna). A more sophisticated antenna, calibrated for that band may have provided additional measurements that may have added to the cumulative exposure values.

- This apparent 132.31% exposure over the FCC standard may be actually significantly higher because it does not account for:

(1) Human RF exposure from mobile phones on the premises. Mobile phone base stations communicate with mobile phones and typically other base stations (depending on backhaul systems, and hand-off architecture, etc). Mobile phones operated next to a base station, for example on a rooftop terrace that also houses base-station installations, add to the cumulative RF exposure of those human beings which may be on the rooftop, in the building, or nearby. The mobile phones and the base stations are part of the same network operation. Mobile phones also have separate FCC Human RF exposure standard Specific Absorption Rate (SAR) requirements. When operated so close to mobile network base stations, (i) mobile phone operations may also have their usage guidelines distorted or violated, and (ii) reasonable and normal mobile phone usage on the premises may require alteration, and (iii) people on or near the premises may not be sufficiently noticed as to these mobile phone usage dynamics.

(2) No Crest Factor Mitigation. In the event that the rooftop and nearby mobile base stations were not deployed with Crest Factor mitigation techniques, the FCC Human RF exposure standard appears to be regularly exceeded by a factor of at least 264% of the appropriate maximum value.<sup>2</sup>

(3) No Additional Calibrated Antennas for Specific Spectrum Bands. It is possible that cumulative RF exposure levels may be detected if additional instrumentation is brought to the premises, such as additional, specialty calibrated antennas (as noted in footnote 1), and signal analyzers.

### **Assessments conducted by:**

T.Brinkoetter (measurements and analysis) J. Sandri (research and development)

---

<sup>2</sup> The actual cumulative exposure levels may be higher when also accounting for:

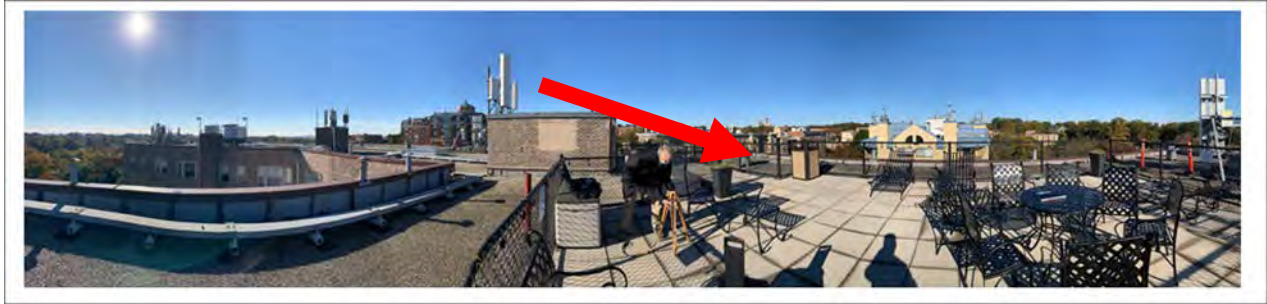
- (i) Human RF exposure from mobile phones on people and/or on premises. Mobile phones have separate FCC Human RF exposure standard Specific Absorption Rate (SAR) requirements. When combined with the mobile network base stations, the mobile phone operations may also have their usage guidelines violated. By engaging in reasonable and normal mobile phone usage on the premises, mobile phone users may not be sufficiently noticed about safety concerns or possible Human RF exposure violations by the radio frequency licensees whose base station emissions are contributing 5% or more of the cumulative signal; and
- (ii) Introducing additional calibrated antennas to more accurately measure exposures in other spectrum bands, such as at 660 MHz (as noted in footnote 1).

Cardinal Communications, A Division of Thought Delivery Systems, Inc.:

[www.ThoughtDelivery.com](http://www.ThoughtDelivery.com) ph: 202.223.2003 [Cardinal@ThoughtDelivery.com](mailto:Cardinal@ThoughtDelivery.com)

## EQUIPMENT & METHODS

NOTES
NOTE 1: The 143dBuV/m field strength measurement was arrived at using CALIBRATED ANRITSU Spectrum Analyzer Model MS2090A coupled with ANRITSU 2000-1791-R EMF isotropic antenna probe.
NOTE 2: Two calibrated spectrum analyzers were used (i) ANRITSU MS2090A Spectrum Analyzer, which can assess from zero (0) MHz-to-43 GHz, and (ii) Rhode & Schwarz Model FPH, which assesses from zero (0) MHz-to-4GHz. ANRITSU found on the rooftop approximately 43.23% of the FCC Human RF public standard <i>without</i> accounting for mobile phone operations, especially SPECIFIC ABSORPTION RATE (SAR) and <i>without</i> accounting for CREST FACTORS. Both spectrum analyzers detected a very strong approximately 660 MHz signal, using an AARONIA Omnilog Model 735 (700MHz-to-2.5 GHz uncalibrated whip antenna).
NOTE 3: 4G and 5G modulation CREST FACTORS are typically 20x (i.e., 13dB). CREST FACTORS currently cannot be completely eliminated in field operations. In the event that the mobile operators deployed CREST FACTOR mitigation, a conservative analysis was also conducted that only calculated using a much reduced 10x (ie, 10dB) crest factor. CITE for 20x (13dB) standard CREST FACTOR: <a href="http://justinpanzer.com/wp-content/uploads/2019/04/RF-Globalnet-Talkin-Test_Aug11_08.pdf">http://justinpanzer.com/wp-content/uploads/2019/04/RF-Globalnet-Talkin-Test_Aug11_08.pdf</a>
NOTE 4: The number reaches 132.31% (apparently violating FCC standard when including conservative 10x (10dB) CREST FACTOR). This 132.31% does not even include calibrated measurements related to the (Approx 660 MHz band) base station signal found using both the ANRITSU Model MS2090A and the Rhode & Schwarz Model FPH spectrum analyzers.
NOTE 5: The HUMAN RF standard reaches 264% (apparently violating FCC 100% standard when including the normal 20x (13dB) CREST FACTOR).
NOTE 6: Impacts to mobile telephone operational guidelines based on these measurements are analyzed elsewhere in this study.
NOTE 7: Measurements of the millimeter wave (mmWave) band from 26.5 GHz-to-40 GHz were conducted using the ANRITSU MS2090A Spectrum Analyzer coupled with the WR-28 Omni Directional Antenna made by Sage Microwave.
NOTE 8: CREST FACTOR measurements can be taken using signal analyzers, such as the Tektronix RSA 306B Analyzer. For example, a recent 4G LTE base station's 751 MHz operations were measured at another location and revealed a peak to average of 14.88 dB. The measurements and analysis at 2701 Connecticut Ave, NW, Washington, DC used a more conservative 10 dB Crest Factor and still resulted in apparent FCC Human RF Exposures spiking over the FCC Human RF exposure value by at least 132%.



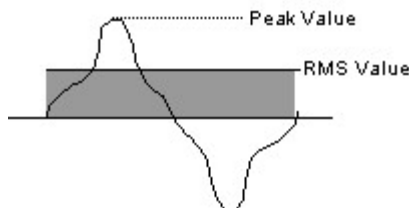
DIRECT HUMAN EXPOSURE CALCULATED AT *LEAST OVER 132%* OF THE ALLOWABLE FCC HUMAN RF EXPOSURE LIMIT WHEN INCLUDING AN ASSESSED, MITIGATED CREST FACTOR. IF THERE IS NO CREST FACTOR MITIGATION, THE EMISSIONS *MAY BE AT LEAST OVER 264%* OF THE ALLOWABLE HUMAN RF EXPOSURE LIMIT.

### XIII. Crest Factor

#### What is Crest Factor

The crest factor is the ratio of peak value to RMS<sup>141</sup> value of waveform as shown in below figure.

This ratio is also called to peak-to-RMS ratio. The crest factor is expressed as follows: Crest Factor (peak-to-RMS ratio)= (peak value)/(RMS value)

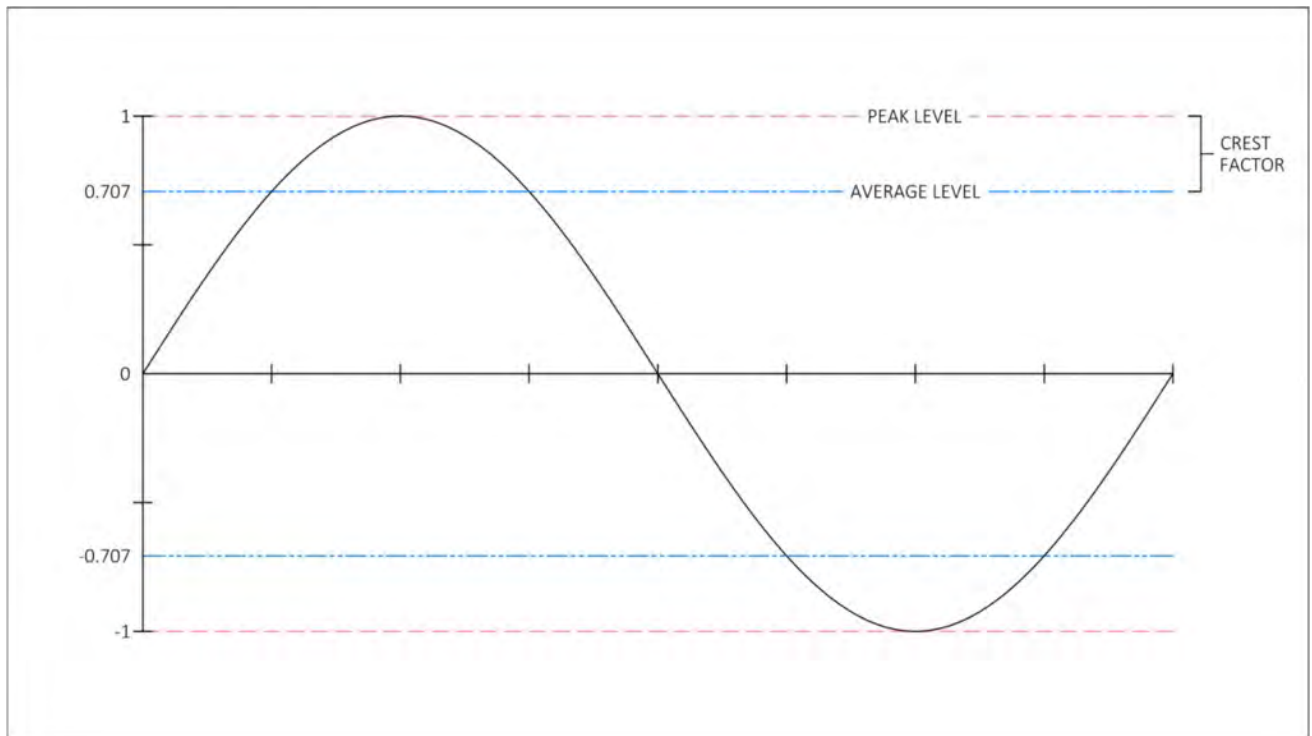


"Crest factor, defined. Simply stated, crest factor—sometimes called peak-to-average ratio—is the difference in decibels between the peak and average levels of a signal. In the strictest technical sense, it only applies to steady-state signals like sine, square, saw, or triangle waves."<sup>142</sup>

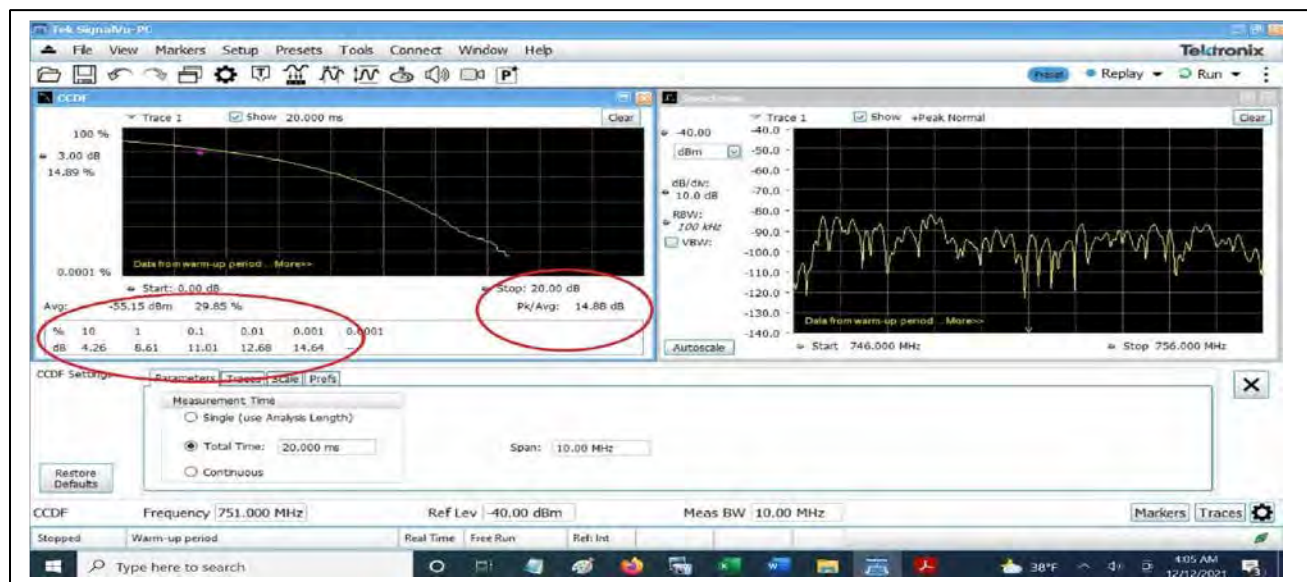
<sup>141</sup> The RMS value of a set of values (or a continuous-time waveform) is the square root of the arithmetic mean of the squares of the values, or the square of the function that defines the continuous waveform. In physics, the RMS current value can also be defined as the "value of the direct current that dissipates the same power in a resistor."

"Root-mean-square value". A Dictionary of Physics (6 ed.). Oxford University Press. 2009. ISBN 9780199233991

<sup>142</sup> "What Is Crest Factor and Why Is It Important?" by Ian Stewart, iZotope Contributor July 28, 2020, <https://www.izotope.com/en/learn/what-is-crest-factor.html> (last accessed, Nov. 17, 2021).; For further information on Crest Factor see also: (i) L. D. da Silva and E. G. de Lima, "A Novel Limiter with Application in Crest Factor Reduction Techniques for Wireless Communications," *2018 31st Symposium on Integrated Circuits and Systems Design (SBCCI)*, 2018, pp. 1-6, doi: 10.1109/SBCCI.2018.8533234, [A Novel Limiter with Application in Crest Factor Reduction Techniques for Wireless Communications | IEEE Conference Publication | IEEE Xplore](#), [last accessed, December 10, 2021] ; and (ii) "Wireless Base Station With Reduced Crest Factor," by Manoj Gupta, Hamid Ali, *International Journal of Scientific & Engineering Research*, Volume 6, Issue 5,



A typical Crest Factor measurement using a Tektronix RSA306 Analyzer at a 4G LTE base station at 751 MHz: Peak to average is 14.88 dB.







**Q. David Benedict**

September 24<sup>th</sup> 2021

To whom it may Concern,

My name is David Benedict. My home for the last 25 years has been at 3585 Needlepeak Rd., South Lake Tahoe, CA. I have Multiple Myeloma, a cancer of the blood in bone marrow. I completed a clinical trial and lengthy chemotherapy at UCSF earlier this year and will be starting chemotherapy again in October.

My Oncologist at UCSF, Dr. Nina Shah, is extremely concerned that if I am continuously exposed to high levels of EMF radiation at my home in South Lake Tahoe from the two Verizon Wireless Cell Towers nearby my home, I will suffer expected high levels of continuous and cumulative oxidative stress which will worsen my prognosis. I have repeatedly asked Verizon for a reasonable accommodation after returning home to South Lake Tahoe, but that request has been denied.

I believe that Verizon and our local officials are acting on the assumption that the human exposure guidelines promulgated by the Federal Communications Commission (FCC) are based on sound science, that the Food and Drug Administration (FDA) has been consulted on those guidelines and, after rigorous scientific inquiry, has approved the guidelines. They therefore reason that any claim of harm due to continuous 24/7 exposure to radiation from a cell tower cannot be based on science, and can be dismissed.

The ADA and FHAA require “reasonable” accommodation. The specific request I am asking is for local officials to require Verizon Wireless to move, shut off the power, turn the antenna away from my home, or shield its small cell wireless facility at 3565 Needlepeak Road, approximately 280 feet from my bedroom window.

Here are a few of the options a building biologist has come up with for a reasonable accommodation.

- A new pole with shield on it to block the radiation from entering my property;
- Outrigger with adjustable shield on it on existing pole;
- Hundreds of feet of aluminum mesh screen stapled to the wood on the side of my house;
- Screen of trees on my property;
- Move my sleeping area and shut off circuit breakers when going to bed.

I am without financial means and do not have the energy to cover the side of my house with aluminum mesh screens. When I have to go to UCSF for cancer treatment, I stay with friends as long as I can. I would expect the City of South Lake Tahoe and Verizon Wireless to cover my costs so I can live and sleep without stress and be protected from contaminating EMF irradiation while I continue my regiment of ongoing chemotherapy.

The City of South Lake Tahoe and Tahoe Regional Planning Authority (TRPA) have the authority to request Verizon to turn off its antenna, move it, or shield it to protect me while I undergo more chemotherapy required after the Car-T drug trial.

Verizon's attorney Paul Albritton claims that our building biology consultant, Eric Windheim's EMF report, and Verizon's consultant Hammett & Edison, Inc., both say the RF emissions at 3565 Needle Peak Rd. are "well below FCC regulations." This is based on the false assumption that the FCC and FDA have an official policy based on the Administrative Procedure Act on maximum RFR emissions, when in reality they are based on nothing but a commentary letter from an FDA official.

Attorney Paul Albritton has also stated that if Verizon protects me, they will have to protect others. He and South Lake Tahoe's city attorney also claim I am not a disabled individual, and therefore do not qualify for ADA/FHAA accommodation.

These false claims have caused me much stress and anxiety. An important part of recovering from cancer is to think positive and reduce stress. I have started to see a therapist and a psychiatrist at UCSF.

I believe there should be restrictions on how close to schools and residential areas RFR emitters can be located. I also hope that someday soon the information on RFR is released to the public. And the Precautionary Principle should not be ignored. People's lives are at stake.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/ David Benedict

David Benedict

3585 Needle Peak Rd.,

South Lake Tahoe, CA 96150



## **R. Monica Eisenstecken**

My name is Monica Eisenstecken. I was born and raised in Lake Tahoe, and my family has lived here since the 1950s. Lake Tahoe is a beautiful place. I remember that when I was growing up, the air was extremely clean and the lake was pristine. The trees were so fresh you could smell their greenness. It breaks my heart to see such a beautiful place being spoiled. You can't smell the trees anymore; you can't smell the forest anymore. That smell is completely gone. And there is a haze now in the sky. There never used to be a haze. It used to be crystal blue sky. On top of it all, the panoramic landscape is now dotted with cell towers and antennas, polluting our already degrading environment with radiofrequency (RF) radiation that is a proven hazard to human health.

This is the story of my personal struggle to fight the construction of a giant cell tower in my neighborhood, and how the lax oversight of both the Federal Communications Commission (FCC) and Food and Drug Administration (FDA) regarding exposures to RF has inflicted real and measurable harm on me, my family and thousands of people in my community.

### **The Coming of the Cell Towers**

The cell tower companies began arriving in 2006; and in recent years it's gotten worse, much worse. There are hundreds of towers, downtown on the tops of the casinos and hotels. Ugly wireless infrastructure, sometimes designed to try to imitate real trees, dot the landscape. They're not fooling anybody – they're just completely fake. You'll be driving down the road and all of a sudden you'll see this huge fake tree rising 30 feet above the other trees, and it sticks out like a sore thumb. It just breaks my heart to see such a beautiful natural place is being ruined like this, and for people to be exposed without their knowledge or consent.

### **My Struggle**

Since 2018, my family and I have been struggling not only to protect our home, but to raise awareness around the valley about the dangers of all these cell towers. A wireless telecom company applied for a permit to build a 112 foot tower next to my house, but we were given no written notice, and none of my neighbors had any opportunity to voice their concerns.

We did not receive a notice from the City of South Lake Tahoe about the meeting to grant the permit. I had to call the City more than once to ask about the City's public meeting about the tower. I did receive something from the Tahoe Regional Planning Agency (TRPA); it said that I would get a notification from the City but it never arrived. So I called again, and was told that the tower had already been approved, right above my property where my family has lived for over sixteen years. This was my father's dream house where he raised his family in the quiet and beauty of Lake Tahoe.

Right away I felt a sense of deception. My instinct told me something was not right. The City told me on the phone that I literally had one hour to appeal the ruling. I didn't even know what exactly I was appealing. I went down to the City and I paid \$150 fee and said I wanted to appeal this action, not knowing at that point what I was appealing.

Then I started doing my own research, calling around and looking on the internet, and I found Eric Windheim, a building biologist. He was the first person I called. Eric told me some pretty disturbing things about these towers and what they do. I learned the radiation is invisible, but it can give you headaches and anxiety and cause sleep problems. I started doing more research, and calling attorneys to get some help to try to figure out what was going on, and why we didn't receive any notice? What were they hiding? The more I learned, the more deceived I felt.

Our home is supposed to be a place where we feel safe. My dad built his dream home here, my children live here. Safety is obviously my number one concern. We have spent a huge amount of time and money basically just trying to protect ourselves from them building this cell tower.

We received a lot of misleading information from the City, things that didn't add up. I don't know if you'd call them lies, but definitely misinformation. People weren't telling the truth. We discovered many things on the tower application from the telecom industry that didn't match up. We asked the City about them, but they wouldn't answer our questions. It just didn't seem right.

We created two organizations, Tahoe for Safer Tech and Tahoe Stewards. Our members are residents who really care about our community, our health, and the beauty of Lake Tahoe. We want to protect Tahoe and we want the truth about what is happening to it to be told. We attended every City Council meeting and during the public comment period we kept trying to explain our concerns in the 3 minute time we were given, but they rudely cut us off.

### **How Tahoe Residents Are Being Harmed**

I would like to record first how my family has been harmed, and then express my concerns about how many other residents have been and continue to be injured by the densifying cell towers in our community. We know that others can expect the same catastrophe that our family is suffering.

To begin, we've been forced to draw upon our life savings just to protect our family from the danger of the proposed tower next door - well over \$100,000, and this doesn't include all the time that I've invested in all this, and other people's time as well. It's like a full-time job. I've probably spent about 60 hours a week, for over a year, and I sacrificed a lot. I missed out on the fun times with my kids. And I was always stressed out. I actually had to quit my job. And my father lost everything that he always wanted in his life. This was his dream property, his heaven. He's 82 years old. And he built his dream home basically to leave for his legacy. He lost everything.

We had to sell our house at a significant loss because buyers did not want to purchase a house with a macro tower looming above and irradiating it. Now we're renters, and we're being forced to leave. We're refugees in a housing market that we can hardly afford.

And then there was the harassment and outright slurs. At the public hearing the attorney for TRPA called us “crazies” simply for voicing our concerns. He said that we’re not “real people”—“fake people.” And the TRPA Council wouldn’t let us speak freely; they cut our time to speak, while they gave the wireless industry representatives almost unlimited time. They treated us like we were the criminals, like dirt basically, and they treated the wireless companies as if they were the heroes. It seemed as the meeting was already rigged against us as the people. We had over 4,000 signatures, more than 1,000 from local people against the tower, and they just ignored everyone. We put volumes of evidence on the harms into the public record, but the TRPA Board and its attorney dismissed and ignored everything. They acted like they didn’t see anything.

We have also been harmed by the radiation my children are exposed to in school. I was concerned about RFR exposure in their school from wireless computers, tablets, routers and smart meters, as well as big cell towers right next to school property. My two children have recognized disabilities. I tried to set up a meeting to discuss the possibility of the school making some reasonable accommodation for them. I sent school officials a link to three webinars developed by Tech Safe Schools, explaining the legal rights of schools to establish safe learning environments for students and teachers, scientific and clinical evidence, and the technology of how to establish wired internet in classrooms. Neither the principal or superintendent of schools would consent even to meet with me and other parents concerned about irradiating our children in Tahoe’s schools.

As I am trying to explain, this is not only about me and my family. Potentially, thousands of other permanent residents of Tahoe are facing, or will soon face the dangers I have been warning against. My neighbor next door has cancer and is trying to stop multiple cell towers from irradiating him. And he’s been on drug trials for his cancer, and his condition is getting worse, I believe, from RFR emanating from the cell towers.

I had a talk with a gentleman who has a tower on his property. He told me that the two people that live next to him, where they kept the equipment for the cell tower, both died of cancer. Another lady I know suffered a heart attack immediately after the telecoms installed a cell tower near her home. She fell down her stairs, and she’s forgetting things now. She forgets where she put her keys. And she told me that this all happened after they put up the cell tower near her house.

### **“Our Hands Are Tied”**

When I first started asking about the cell towers, I just heard from people that there’s so much money at stake, there’s nothing you can do. And the City, from the very beginning, said we can’t talk about health effects. That because it’s preempted by the 1996 Telecommunications Act. You can’t even talk about it, you can’t even bring it up. Our hands are tied. There’s nothing we can do.

But this is all based on the claim by the wireless companies, the City and TRPA that the FCC says the radiation from the tower is totally safe, that there is no problem. So, when neighbors hear this, they believe it and are reassured. On the one hand, the City’s hands are tied;

on the other, it's not a problem because RFR exposure under the present FCC's standard is safe for communities. But what if that standard is not based on science to protect people, but instead it protects the wireless companies? Don't people matter?

Specifically, when we would bring up health in their public comment period, the City, or TRPA board, say they can't consider health effects. There's nothing they can do. Our Tahoe community's health and safety has been taken care of by the federal government. Effectively, they are telling us that whatever protections we have under federal law, and under California state law -- for example, the civil right to be free from assault, or trespass; or our right to protect our children from endangerment -- that we no longer have any of these basic rights.

### **False Claims**

All of this makes me feel extremely vulnerable. I know that these things are not safe. But yet I can no longer even protect myself or my family or my home. I feel like we're not living in the United States of America anymore. I don't feel safe. I feel like all my rights to protect my family, my home, it's all been taken away. It's all been stripped away.

And it's all based on misinformation. The FCC implies that its exposure standards are endorsed by the FDA, but that's not true. The FCC knows it, and the FDA knows it, but neither one is admitting the truth: the standards are based on old science that does not protect the public.

I do believe that once people in Tahoe learn that these are simply misleading and false claims, many people will support getting rid of all the towers in Tahoe. It will give our community more confidence to step forward and say something and do something positive and constructive, for our community, our children, and our environment.

Our schools are an excellent example where things may start changing. I think many parents are going to be very upset to learn that the federal government is encouraging local school superintendents to believe it is okay to expose our children to high levels of RFR in schools. I believe parents will not tolerate this. It's all about being curious, to be informed, and, ultimately, caring for each other.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/Monica Eisenstecken

Monica Eisenstecken

Soon to be moving from:

3605 Needle Peak Road

South Lake Tahoe City, CA 96150

October 2, 2021



## **S. Marcia Haller**

To Whom It May Concern,

My name is Marcia Haller and I live at 7420 Rice Lake Road, Duluth MN. I am submitting this written testimony to support a petition to federal agencies to please establish and promote science-based health standards for exposure to radiofrequency radiation. The current standards being promoted by the Federal Communications Commission (FCC) are hopelessly out of date, and fail to protect the public from harm. Meanwhile, the Food and Drug Administration, our nation's primary health agency charged with protecting the public from harm, has been officially silent on the issue, allowing the public to assume (and the telecoms to imply) that it has formally approved of the FCC guidelines, when it has not. This situation cannot be tolerated, as it poses an imminent threat of harm to the American public, including myself.

I would like to share my experience about RFR with you. Most of my career has been bookkeeping and doing payroll for a few small businesses, but my passion was always helping people. Several years ago, I joined our local fire department and knew I found my calling. I was very active in the department and even had been mentioned as making the most calls on more than one occasion. I enjoyed it so much I decided to further my devotion and enroll in college to become a registered nurse. After a couple semesters I started working as a CNA at our local hospital, I was in school at the time and still fulfilling my duties on the fire department. It was a lot of work, but I managed.

Then one day my world changed forever. Our rural home is located about 800 feet from a cell tower. When we built on our property, we were unaware that a cell tower had gotten approval and was under construction at the same time. This was in 2008, when we realized this, we didn't think much about it. But in late September early October of 2019 workers arrived at the tower with a large crane for about a week. Once the crane came down and in less than a week that is when my world changed forever.

I immediately began having severe vertigo, headaches and confusion. We went to the emergency room, and I was diagnosed with vertigo. A week went by with no relief, and I went back to the emergency room, and they thought it could be Multiple Sclerosis, but then more testing and brain imaging showed multiple lesions, or Transient Ischemic Attacks. They ruled out M.S. but they were still unsure what was causing me to have multiple brain lesions. All of October 2019 was trips back and forth to the hospital, each time showed more and more strokes. In November I was accepted to the Mayo clinic in Rochester, MN, where I was diagnosed with a very, very rare autoimmune disease called Susac syndrome (See Attachment 1—Timeline), at that time I believe there were fewer than 375 cases in the world. After being diagnosed and after starting the treatment process that would normally work on this rare auto-immune disease in high hopes that my strokes would stop, I found out it wasn't working. The doctors were starting to question their prognosis. They did more testing and, still unsure, they decided to start me on a chemo drug called cyclophosphamide, and then my strokes stopped.

In the meantime, my husband had a flash of insight one night that my health crisis may be the result of too much radiation exposure from the cell tower. We started doing some research online, and to our surprise, I was having many of the symptoms that are related to RF over-exposure.

After reaching out to many people trying to find answers, I stumbled across Dr. Beatrice Golomb. I emailed her my story, and to my surprise, she emailed me back. We have been working together ever since. She is doing a case study on me and my family. She believes that the cell tower antennas are the cause of my health issues. As she and I have talked, things that have happened to me and my family in the past, even before 2019, could have been caused from the RF radiation emitting onto our property from the cell tower. I have also spoken with Dr. Sharon Goldberg, who also believes that the RF radiation emitting onto our property has caused my illness, including my strokes, and she is concerned that if the tower radiation continues, it will lead to my having new strokes and continuing illness.

In March 2020, we moved out of our house and into my parents' home that is a mile down the road. They work out of town, and we thought that if it is the tower making me sick, it would be best to get away from it and see if I feel better. And guess what? It worked! After staying at my parents' for a while, I started to feel better. I was sleeping better, I had more energy, I was thinking more clearly.

In October of 2020 my parents were coming back home, so my husband and I had no other choice but to move back to our home, still of course being irradiated from the tower. After being back home, I started to feel ill again. I felt nauseous, dizzy, unsteady, pressure in my head almost like a vibration feeling. I have a sound in my head that sounds like a motor running constantly, ringing in my ears, joint pain, insomnia, and fatigue. I have cognitive issues, and my head at times feels full.

One day I was walking down the driveway and my head started to feel a lot of pressure and my ears started to hurt. I told my husband when he got home, and he followed me with our Trifield consumer grade EMF meter, telling me to stop if I felt that feeling again. When I did, he read the meter at that spot and the RF readings were higher. We then continued to walk around, and whenever I had that feeling in my head I would tell him. And the meter would show similar increased RF readings.

This is when my husband and I decided to hire a building biologist to come to our home and do some readings (see Attachment 2). The report by the building biologist showed very high readings. So my husband decided to build a Faraday Cage in our garage for us to sleep in, and for me to go into whenever I feel I need to. Being in the Faraday Cage makes me feel like when you have been working a long day, and you get home and take off your shoes and put your feet up. It is like that "Ahhh" feeling! That is what my head feels like when I'm in the Faraday Cage. Otherwise, when I am not, I start feeling ill.

Since my husband built the Faraday Cage in October of 2020, we sleep in it every night. In the Faraday cage there is one single bed and one bunk bed where my husband and son sleep, and a small battery operated TV. There are no windows, no lights, no running water. If I need to use the bathroom, I need to go into the house. And believe me, in the wintertime that is no fun in the subzero temperatures and snow. I also go into the Faraday Cage during the day when my head feels too bad.

My husband and son have also experienced health problems that are related to symptoms of radiation over-exposure. My husband was diagnosed with rheumatoid arthritis in 2014. He has recently seen a doctor because of abdominal pain. After an ultrasound, he was told he has cysts

on his liver and a slightly elevated Mean Corpuscular Hemoglobin Concentration (MCHC). My husband read that elevated MCHC can be caused by RFR over-exposure.<sup>143</sup>

My son has had problems with anxiety, which was severe when he was first diagnosed in 2012. He has also recently been diagnosed with fatty tumors on the side of his abdomen.

We also believe the radiation over-exposure lead to our dog's premature death, and also affected the wildlife around our property. My family and I had to put our dog of ten years down due to fatty tumors, and her inability to walk around without pain and discomfort. She had tumors all over her body (see Picture 1).



*Picture 1*

This was our dog Daisy Doo. We had to put her to rest on 12/31/2020 at the age of ten because of her lack of mobility and quality of life due to tumors all over her body. The veterinarian at Airport Animal Hospital stated, "I have never seen anything like it."

Some of the deer that come onto our property have antlers with bizarre, unnatural shapes (see Pictures 2 and 3). And a few of them also have lumps on them that to me look like fatty tumors.



*Picture 2*



*Picture 3*

We also feed hummingbirds with two feeders, one of which needs regular refilling, while the other stays full. My husband noticed that the feeder that the hummingbirds prefer is not in the direct line of the tower and is blocked by trees, while the one that stays full is in a direct line of

---

<sup>143</sup> [Effect Of Electromagnetic Field On Body Weight And Blood Indices In Albino Rats](#)

sight of the tower. We decided to do a little experiment and move the one that they never drink into the same tree that is not in the direct line of the tower. They started drinking from that one almost immediately. I have videos of this.

Not only has our family and wildlife around us been affected, but our neighbors have also been tragically harmed. One neighbor died at the age of 58 of a stroke in January 2020; she was also fighting cancer as well. Her house is the same distance from the tower as our home. Another neighbor that lives across the road from us also died from cancer from a brain tumor in December of 2017 at the age of 59. His wife also has medical problems. She has recently just found her dog dead in the yard; it, too, had a mass growing in his abdominal area.

My husband and I have been asking our local government to help fix this problem that is causing my health issues along with my family, neighbors and local wildlife, but they continue to say their hands are tied because of federal preemption by the FCC's so-called FCC "safe" guidelines.

Our local town board consists of 5-6 members on the planning and zoning commission, and the board itself has 3 members, 2 supervisors and 1 chair. Meetings are held twice a month, which makes it difficult to get anything done in a timely manner. There is a clerk and deputy clerk, but they only are available on Wednesdays.

We have attended every town board meeting for over a year; half of those were Zoom meetings due to Covid restrictions. We have supplied them with a lot of information to help educate them, only to be told there is nothing they can do. At the last meeting, we presented a "soft" cease and desist-type letter, based on the August 13, 2021 building biologist's findings. The experience of many people living close to this tower clearly shows it is harming our lives, and the federal maximum exposure guidelines that the town is saying "ties their hands" are NOT safe.

We initially asked the town board to influence American Towers to redirect the antenna overlooking our home. The town contacted American Towers and presented the responsible official with our request, along with the RF survey we paid to have done. American Towers' response was to have their own survey done based on information from AT&T and T-Mobile on antenna type, placement and height. American Towers hired a company of their choice to do a computer model of RF emissions. The findings showed a 6-foot-tall man standing 200 feet away from the base of the tower would be in a safe zone (see [report](#)). They also went as far as to call this building biologist we hired "unqualified" and attempted to discredit his 40 years of experience in this field. The town board agreed the survey from American Towers was very poorly done, and we needed something more to prove our home is safe from radiation exposure.

American Towers finally agreed to send a team out to our property and conduct their own RF readings. Their main demand was that only members of the town board could be present, along with the homeowner and family. I asked if Frank DiChristina, the building biologist we hired, could be present for the readings; their response was "no," and if anyone else was present that the readings would stop, and they would immediately pack up and leave. They also said there would be no interaction between their team and anyone present, due to Covid. On their arrival, we all introduced ourselves, we had a couple members from the board along with our town lawyer. They sent a two-man team, one man was an area manager, the other a site manager. My husband asked what their job qualifications were. One said he cut grass and picked up fallen trees. The other said something about flying a drone over the site. Either way, these men were

clearly not RF engineers. They had brought personal protection equipment to perform the readings, none of which read in actual real-time power levels, but in percentages. People that work around cell tower antennas wear the devices, which sound off when workers are exposed to too much RFR. The readings started, and the device read 4%. The men said: See, it's only 4%, its safe. I said: 4% of what? Their response was: I don't know.

I have been told since then by other people in the RF field that the device they used measures and calculates the person's daily/weekly RF radiation absorption limits, and sounds an alert when the worker needs to get out of there, kind of like a carbon monoxide detector. The readings came to an end, we said our goodbyes and everyone went home. A few days later a follow-up conversation between the town lawyer and American Towers revealed that the limits were safe and in compliance with the FCC guidelines and there is nothing that can or needs to be done (see Attachment 3).

The remedy that my family is urgently requesting is that the tower be taken down because the FCC guidelines that are being cited as the basis for allowing the tower to radiate our community are not based on the latest scientific research and do not protect us from RFR exposure, and the tower is therefore making many people and animals sick.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/Marcia Haller

Marcia Haller

7420 Rice Lake Road, Duluth MN 55803

218-391-0234

October 5, 2021

### **Attachment 1—Timeline**

- In the end of September, early October of 2019, a crane was placed against the existing cell tower. After the crane was taken down, I began to feel ill. I was dizzy, I had a headache, I was nauseous. I couldn't pick my head up off the pillow without the room spinning and feeling very sick.
- October 7, 2019 – I went to Urgent Care (ED) and was diagnosed with vertigo.
- October 10 - 13, 2019 – I went to the ED and was diagnosed with strokes, vision loss and balance difficulties.
- October 29 – 31, 2019 – I went to the ED and was diagnosed with strokes.
- November 5- 7, 2019 - I went to the ED and was diagnosed with strokes. From there I signed myself out and went to the Mayo Clinic in Rochester, NY.
- November 8, 2019 – I was at the Mayo Clinic where I was diagnosed with a rare autoimmune disease called Susac syndrome.
- November 8 – 22, 2019 – I was at the Mayo clinic receiving treatment.
- November 25, 2019 - Started getting headaches and feeling dizzy. This went on almost every day all day. (See journal)
- December 11 – 12, 2019 - I went to the ED and was diagnosed with strokes.
- December 16, 2019 - Had pain in the back of my head. (See journal)
- December 23, 2019 – I had hearing loss in my left ear.
- December 26, 2019 – I went to Rochester – St. Mary's. I was showed I had more TIAs and hearing loss in the left ear.
- December 26, 2019 – January 2, 2020, I was at St. Mary's hospital and Mayo Clinic in Rochester receiving treatment.
- January 2 – 6, 2020 – I was at home.
- January 6 – 10, 2020 – I went back to the Mayo Clinic for more treatment.
- January 10-12, 2020 - I was at home.
- January 12- 16, 2020 – At Mayo Clinic.
- January 13, 2020 – MRI showed I had numerous new TIAs.
- March 3, 2020 – Moved into my parents' house.
- October 2020 – Moved back home.
- October 16, 2020 – Had building biologist Frank DiCristina analyze our home. In attendance was also Carter Williams (Chair of Gnesen Planning and Zoning board), Peter Berman (Gnesen Planning and Zoning board member), and Kevin Middleton (Gnesen Planning and Zoning board member). Kevin called my husband Jason after he had left and said he had a headache after being at our home.
- Late October 2020 – Jason built a Faraday Cage in the garage to block all the RF.

- April 30, 2021 – Jon Nelson (Board Chair of Gnesen Township) came to our home to see the tower and watched us take some readings. He also stated he experienced some of the symptoms we feel when we are at home, which went away as soon as he left. (related to us in zoom meeting May 10, 2021).
- May 6, 2021 – Had two employees from American Towers, Nate LaCousiere (Gnesen's Attorney), Jon Nelson, and Nathan Horyza (Zoning Officer for Gnesen) over to do some readings with American Towers equipment. Also showed Nate LaCousiere and Nathan Horyza the Faraday Cage room in the garage where we sleep.
- August 10, 2021 – Met (via telehealth) with Sharon Goldberg, MD.

## Attachment 2 — Building Biology Summary Report by Frank DiCristina, BBEC, EMRS

10/18/2020

I was hired to inspect a property at 7420 Rice Lake Road, Duluth, MN 55803 owned by Marcia and Jay Haller. I arrived on October 16, 2020 at 12:30pm. Upon arrival I was met by Jay Haller and then shortly afterwards his wife Marcia. Immediately I noticed the cellular antenna tower on the adjacent property out past their back yard. The Hallers informed me that they have been living on the property and that the cellular tower was installed in the past few years.

Marcia said she started to have health issues shortly after a crane was observed at the cellular tower site performing maintenance. Some of her complains were headaches, dizziness, lethargy, and other symptoms which she has now seen medical care for. I informed Marcia and Jay that I am not medically trained so I cannot make any observations, I am a technician and I take measurements.

My background is 40 years in the industry as a technician in the aerospace, industrial, avionics, and computer industries. My main job in most of these industries was repair and measurement of interference noise in systems. My job was to find the interference and advise the engineers on my findings so we collectively can come up with a solution to resolve the issue. Radio Frequency exposure or “leakage” is solved 1 of 3 ways typically, reduction, elimination, or shielding. In this particular case shielding an entire home is not practical. So either reduction or elimination is the best option.

### Readings:

Location	Power Density (mW/m <sup>2</sup> ) (1 mW/m <sup>2</sup> = 1,000 µW/m <sup>2</sup> )
Side porch	10 mW
Back porch	11 mW
Back yard near house	12 mW
Back yard near metal stake in ground placed by client	16 mW
Inside house at dining table	11mW
In bedroom	11mW with a peak of 18 mW

These readings were taken over a period of 3 hours. Meters used were a GigaHertz 59B and a RF Explorer Spectrum Analyzer. The client also had a Trifield TF2 (consumer grade). Antennas used were an Omni directional antenna and a “Christmas Tree” directional antenna for the 59B, and 2 Omni direction antennas for the RF Explorer.

Building Biology Standards related to RFR (High Frequency, Electromagnetic Waves):

Power Density (µW/m <sup>2</sup> )	Level of Concern
< 0.1	No Concern
0.1-10	Slight Concern
10-1,000	Severe Concern
> 1,000	Extreme concern

The readings taken were well above **Extreme** Concern range — in other words, my meters never read lower than **10 mW** when I should have been reading no higher than **1μW**.

I was also informed that at nighttime the readings get much higher, but I have not verified this as of yet.

The information provided here is to the best of my knowledge and true. None of the readings taken were altered or doctored.

/s/Frank DiCristina, BBEC, EMRS

Frank DiCristina

8509 Bryant Avenue South

Bloomington, MN 55420

frank@gratefuldowsing.com

www.gratefuldowsing.com

612-384-1334

## Attachment 3 — American Towers Email

9/27/21, 1:35 PM

Gmail - Fwd: American Towers Communication



Marcia Haller <marciahaller01@gmail.com>

---

### Fwd: American Towers Communication

---

Jason Haller <jhaller0611@gmail.com>  
To: Marcia Haller <marciahaller01@gmail.com>

Wed, Jul 28, 2021 at 8:16 AM

----- Forwarded message -----

From: <nathan@gnesen.org>  
Date: Tue, Jul 27, 2021, 7:30 PM  
Subject: American Towers Communication  
To: jhaller0611@gmail.com <jhaller0611@gmail.com>

Jay,

As requested, this email is to capture our conversation this evening on 7/27/21 concerning American Towers response to our request to reposition one of the cell antennae's that appear to be pointed toward your residence.

American Towers communicated to the Township through our attorney that they have no evidence that shows the equipment on the tower is out of compliance with FCC regulation. As such they have told us that they will not be repositioning the antennae in question.

I know this is not the news you were hoping for but as long as they are following FCC regulation, there isn't much more the township can do at this point.

Feel free to call with any questions.

Nathan Horyza  
Gnesen Zoning Officer  
218-341-0208



## **T. Robert Strayton**

My name is Robert Strayton. I live on the island of Chappaquiddick, a small peninsula off the island of Martha's Vineyard, and part of the Town of Edgartown, MA. I am writing this document to support the petitioners who seek the establishment, by the Food and Drug Administration, of a science-based standard for exposure to radiofrequency radiation (RFR) which takes into account not only the latest science, but the life-threatening potential of RFR to disrupt the proper functioning of critical medical devices.

I am currently a chef and owner of two restaurants, but from 1990 through 2017 I worked for, and eventually managed, and then owned, a strategic communications consultancy focused on technology companies. Over that nearly 30-year span the majority of my client companies were designing and building hardware, software and devices targeted at telecommunications carriers and telecom infrastructure suppliers. For 30 years I was intimately involved in the creation and development of the various telecom technologies we largely take for granted today, including voicemail, automated attendant, call forwarding, three-way-calling, and perhaps most fittingly, Voice over IP (VoIP) and Video over IP (i.e. Zoom), the things that literally enable cellular networks to function.

While not an engineer, I have a deep and broad understanding of the various technologies, at a level of granularity far beyond the average lay person. If you tell me that a telephone call is being made from a cell phone using CDMA, connecting to a tower connected to a fiber-ring then I know it's CDMA to ATM to simply connect the senders handset to the network. In other words, in every hearing I was the most knowledgeable person in the room when it came to telecom technology, how it works and the obvious limitations and vulnerabilities of the site selected. A prescience borne out by the need, now, to construct the "Katama Silo" tower, and the inability of residents across our little six square mile island to connect to the current tower.

In 2018, the Town of Edgartown approved the construction of a 120-foot cell tower in the front yard of my neighbor's 1/2-acre residential lot. They did this in spite of there being at least 425 locations on our 6-square mile island where a cell tower could be built. Instead, the site of this tower is in the most densely populated year-round neighborhood of a largely wooded, uninhabited island (year-round population about 200). The current tower is 33 feet off the public right-of-way, within 130 feet of 3 neighboring homes, within 500 feet of nearly two dozen homes and is less than 200 feet from my property.

Under the initial configuration the tower pulses out roughly 45,000 Watts of electromagnetic radiation.

Readings taken by a certified building biologist showed very high levels of radiation everywhere on my property, and very significant levels in my bedroom, kitchen and other areas of my home.

These high levels of radiation are a problem for me because in November 2018, less than two months after the approval of this tower, I had a serious ST Elevated myocardial infarction (STEMI), a "heart attack" in the second proximal artery of my left anterior descending (LAD) artery. As a result of that heart attack, and subsequent complications, my cardiologist prescribed

a blood pressure monitoring device and an at-home EKG monitor to track and monitor my cardiac health and function.

Both devices, my Welch-Allyn Blood Pressure machine and my AliveCor KardiaMobil 6L EKG device, specifically state they can and will malfunction in the presence of strong electromagnetic radiation fields. The manuals go on to provide a table of radio frequencies, power outputs and minimum safe distances from a radiated energy source. They also provide formulae to calculate minimum safe distances from other radiating devices.

Utilizing the specifications from the original tower design submitted to the Town of Edgartown as part of the permitting application, we calculated wattage outputs of 43,000+ Watts of radiation, and a minimum safe distance at over 840 feet, well outside my property lines.

In other words, there is nowhere on my property where I can expect to get accurate readings on these highly sensitive, FDA-approved medical devices. The inability to accurately monitor my health, to get accurate, reliable readings from my devices does endanger my health and places my very life at risk.

Perhaps worst of all, this tower was touted for its “public safety benefits,” but that has proven to be a complete fabrication on the part of AT&T, its attorneys Anderson & Krieger, and its then attorney, Brian Grossman. In fact, the tower failed to provide emergency communications to the Edgartown Fire Department on December 4, 2020 at 11:30 AM when I experienced supra-ventricular tachycardia (SVT), an uncontrolled heartbeat that can lead to stroke, cardiac arrest and death.

On that day, the Edgartown Fire Department (EFD), in spite of being less than 300 feet from the tower, in spite of all Edgartown Firefighters and paramedics being equipped with AT&T phones, the EFD could not communicate using the tower. It could not transmit my EKG to the MV Hospital Emergency Department (ED), it could not receive authorization from the ED to administer adenosine to stop my heart temporarily (hopefully), and it could not contact another paramedic to assist in my transport and care.

It was not until we reached the far western side of Chappaquiddick, the actual ferry landing, where the EFD could, using the North Street tower in Edgartown, transmit my EKG (my heart rate then at 225 beats per minute, or nearly *four beats per second*), receive authorization to administer adenosine and stop my heart, all while waiting to board the ferry for the trip across Edgartown harbor and then 15-minute ride to the hospital.

The important thing to understand is up until that day, the day AT&T was literally adding 5G to that tower, I had never, at any time in my life, even during my heart attack, had an irregular heartbeat. I did not ever experience SVT, I had never been diagnosed with aFib. Even while I was having a heart attack, even while my interventional cardiologist had a wire in my heart, did I have an irregular heartbeat. One month later, on January 2, 2021 I again experienced SVT, my heart rate climbing precipitously, and again requiring a visit to the Martha's Vineyard Hospital ED and medical intervention to bring my heart rate back to a somewhat normal resting heart rate.

As a result of these two episodes, I was asked to wear a “Holter Monitor” a device that monitors constantly your heart rhythm, for two weeks. The device transmits EKG information on an irregular heartbeat over a cellular network to a monitoring company which evaluates the EKG and transmits the results to my cardiologist. In this case, AT&T’s network (AT&T and Verizon use totally different and incompatible transport technologies: CDMA v. GSM) but, again, in my home, less than 300 feet from the AT&T tower, the Holter monitor could not connect, could not transmit my EKG information.

The response to these two events was to TRIPLE the amount of metoprolol I was taking on a daily basis. Prior to these events I took 25 mg once a day, that was doubled to 25 mg twice a day in December and an additional 25 mg per day was prescribed in January so that now I take 50 mg in the morning, 25 mg at night. Triple my initial dose! Also as a result, my blood thinner was altered from a single Plavix (10 mg 1x/day) once a day, to Eliquis, taken twice a day. These medications do not come without risks, side effects or consequence. This tower is literally endangering my life every single day, with no recognizable public safety benefit.

If the tower does not work literally in its own shadow, and if it endangers my health, my life, by its very existence, then it does not provide a public safety benefit; in fact, it represents a grave danger to people’s health. Whether from deadly radiation emissions, to unsubstantiated claims about emergency communications, to ice falling from a bare galvanized steel structure looming dangerously over the road, this tower is not simply a nuisance, but a danger to me, and every single person passing by that most egregious location.

AT&T claimed this tower “meets FCC standards” and that emissions from the tower “were within FCC guidelines.” What AT&T did not say, would not say, was that the emissions from the tower are “safe,” that they will not cause physical harm. They know the emissions are dangerous to human health, and they know the emissions interfere with medical devices, the Food & Drug Administration identified medical device interference years ago, specifically as it relates to cardiac devices and monitors.

When questioned on the safety of tower emissions, the permitting authority, the Edgartown Planning Board stated, “it had no expertise to evaluate the safety of the tower” but perhaps more egregiously, refused to allow anyone to ask health-related questions of the tower, claiming they could not “listen to any ‘health’ questions or objections.” An effective denial of citizens First Amendment rights, and a denial of due process under the law. The Town of Edgartown relied upon a theoretical report provided in the application as to the “safety” of radiation emissions from the tower. The Planning Board abdicated its responsibility to the citizens it serves, and stated that if the tower met FCC emission standards there was ‘nothing’ it could do.

I argued throughout the public hearing process that there exists better, safer, more compliant, less impactful locations on Chappaquiddick to site a cell tower. That was true then, it is true now. There are at least 53 locations on Chappaquiddick that AT&T themselves have said would “substantially fill the known coverage gap” and which meet the minimum lot size under Edgartown Zoning laws (R-120, 3+ acres, no commercial or industrial use), at least a dozen of those sites are on large 6+ acre town-owned parcels, with no homes within 1,000 feet.

The fact that the minute 5G was added to that tower I suddenly developed an irregular heartbeat should give one pause. Was that the cause of my irregular heartbeat? Nothing else had changed in my life except for the 5G emissions. What is certain is that the tower does not work as claimed, does endanger innocent people, benefits one man who made a unilateral decision, and was approved only through a series of illegal and backroom deals, the details of which I will not delve into here, but the proof of which can be supplied.

In deciding to approve the tower, local officials are relying on telecom claims that their equipment complies with FCC exposure guidelines. In turn, the FCC claims that its 25-year-old exposure guidelines are the product of careful consultation with the FDA. But the fact is, FDA has not developed nor issued any exposure standards of its own, particularly standards that would prevent towers like the one near my home from interfering with critical medical devices. This inaction on the part of the FDA and the deceit by the FCC may very possibly cost me my life. This must be remedied immediately.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/Robert Strayton

Robert Strayton  
307 Chappaquiddick Rd.  
Edgartown MA 02539



## **U. Shirley Jackson**

My name is Shirley Joy Denton Jackson. I live at 12875 Barrow Road, North Palm Beach, FL 33408. I've been an educator my entire career, with varied system-wide and college positions. I am also electromagnetically sensitive. My career was cut at least five-years short due to experiencing a mysterious constellation of substantial health effects that prevented me from fulfilling my job responsibilities at that time. Although I had evidence that it was the environment that was severely impacting my performance, my request for accommodation was denied.

Rather than spend time in an uphill fight about something that still was very mysterious to me, I was fortunate enough to be able to retire early and use my professional skills to discover what was happening and how could I regain my previously active, physically, mentally, and emotionally vibrant and well-balanced life. Since then, I have been actively involved in sharing the peer-reviewed research on adverse health effects and helping people prevent or mitigate negative impacts. There are many ways to handle and deploy technology more safely: the problem is our regulatory agencies, cowered by the power of industry influence, have shirked their responsibilities.

The tragic impacts of FDA and HHS failing to fulfill their responsibilities to the American people are already upon us. Their job is to proactively keep citizens safe by having a science-based policy and alerting the public to the scientifically known adverse effects of radio frequency microwave radiation (RFMR) and other wavelengths on the electromagnetic (EMF) spectrum. I hereby declare my support for this Petition.

The adverse health effects of RFMR that have been, in essence, kept from public knowledge, are crucial and pivotal information for local agencies, such as the School District of Palm Beach County (SDPBC) and the Board of County Commissioners of Palm Beach County (BCC-PBC). These elected leaders are our front-line citizen champions, also charged with fiduciary responsibilities to ensure the public's safety.

But with the FDA, HHS and FCC failing to properly do their job, these leaders have decided to trust vendors' assurances that their wireless technologies are "FCC-certified" or "FCC-compliant," with the horribly tragic and false implication that such a designation means it is safe. No... being FCC-certified or compliant does not mean it is safe from adverse biological health effects. Even the industry's CTIA wireless association has covered itself via circular statements, carefully avoiding the word "safe" and simply restating that their equipment is "compliant."

This has resulted in, and continues to constitute, an Imminent Hazard to the Public.

As the DC Circuit Court judges ruled on August 13, 2021, the FCC has not properly monitored or responded to the latest science. It has not established clear policies (like establishing biologically-based human exposure limits rather than its currently thermal-only human exposure limits) for considering the risks of exposure. The simultaneous dereliction of duty by the FDA and HHS has allowed our local officials and the world instead to depend upon the false premise that "exposure to RF radiation at levels below its current limits causes no negative health effects." People's lives, especially children, those with compromised immune systems, those with implanted medical devices, pregnant women and those with disabilities are unknowingly being exposed and endangered because of this. Additionally, the FDA declines the

opportunity to monitor human safety by registering complaints about malfunctioning radiation-emitting devices, while ignoring complaints about adverse human experiences resulting from exposure to RFMR.

AS A RESULT: The School Board has purchased millions of dollars of wireless curriculum and equipment for even its youngest and special needs students. In late 2016 and early 2017, without any deeper review except assurances of compliance from their vendors, they purchased online reading curriculum for the elementary students and installed wireless technology throughout their buildings, including in classrooms where the most vulnerable special needs students spend their day. Despite citizen requests for a task force to establish Wireless Safety protocols for students and teachers, none were pursued because the vendors implied that compliance with federal regulations meant their products were “safe” – causing no negative health effects. Instead, chronic radiation exposure levels directly increased for 165,000 children with no informative precautionary guidance and no monitoring provided – that is a ridiculously avoidable Imminent Hazard to the Public and to the future viability of our country.

When COVID shut-downs occurred, the School Board eagerly rushed to partnership efforts and purchases with the county Wi-Fi Mesh Network, driving the push for more deployment, now in the public right-of-ways outside and then inside students’ homes, with Wi-Fi Extenders transmitting 24/7. In the meantime, free vendor hotspots were installed, especially in the homes of low income families whose health risk factors are known to be higher, all because there were no official alerts about adverse effects, and the vendors kept touting compliance.

Without any assurances of safety other than its IT department parroting the false implications of safety from vendors’ claims of being FCC-certified, the PBC Board of County Commissioners has rushed to deploy a Wi-Fi Mesh Network. Despite citizen requests to pause, and technical evidence of overpowered, unneeded and improperly located permits and research that had been submitted to the FCC, but arbitrarily and capriciously discounted, the deployment of 1,400 unregistered antennas in the community and 96 root radios on school grounds is nearing completion.

Despite the peer-reviewed science documenting the adverse effects, the county is marching on. There will be yet another heavy blanket of RF Radiation transmissions broadcast that will certainly, according to peer-reviewed science, cause subtle but toxic changes at the cellular level: multiple oxidative stress indicators will flourish and the calcium channel disruptions, basic to cell functions, will effect various adverse reactions. Reality check: diabetes and A1C levels have significantly risen in recent years. A1C indicators are proven to rise with exposure to wireless transmission frequencies. Shouldn’t regulatory agencies determine safety? Shouldn’t we pro-actively have a positive campaign about good wireless safety, especially because the wireless industry has shrunk its legal notifications to almost nothing? Citizen warnings have been to no avail, because the supposedly authoritative regulatory agencies have shirked their duties.

WHY SHOULD YOU LISTEN TO ME... a retired educator who has this little known (in the United States) functional disability referred to as Electromagnetic Sensitivity or Radiation Sickness? Because I am uniquely qualified to comment because of the research skills and expertise that I have acquired both professionally and personally.

My expertise includes:

-- a multi-year certified Florida Performance Management System observer, trained by leading industry practitioners (Motorola and Florida Power and Light) on the statistical and process tools of quality management.

--an experienced educator with a deep understanding of student risk factors -- originator of an innovative district-wide database system using at-risk indicators to identify and plan supportive interventions for individual students and whole schools.

--an experienced researcher, well versed in the science and technology of measuring and mitigating exposures to RFR fields.

– extensive skills and knowledge obtained through the Building Biology Institute

Here is a practical example of my expertise: In 2017 I entered a restaurant, immediately sensed and measured high RFR exposures in the foyer (over 1000 microwatts per meter squared), but I was hungry and searched further. I found that most of the restaurant was quite tolerable (below 100) except that one spot in the foyer. We were seated next to a table of apparently a grandmother and two adult daughters waiting for a third adult and her daughter. Suddenly I heard an ear-piercing shriek from the foyer, like an animal being wounded. I immediately knew what had happened. A child had just felt that same invisible but sudden blast of localized high exposures that I had experienced and measured. As the mother and young girl came to sit at the table, the girl wiggled and squirmed in her seat. The mother softly spoke as if this had happened other times... “if you can’t handle sitting still, then say so and we will leave. We can see them later.” The little girl said she couldn’t. The mom and little girl left.

I went to the table when the remaining family were finishing up. I told them of my professional and my personal background, & what I had noticed and said I understood...could I ask just a few questions. Turns out the little girl had been a fine student, loved school. I asked about “date of on-set.” I talked with them, and “it all changed” after some school holiday. Anything different in school after that? Well, they did start a new reading program the day they returned. Every second grade child was given a wireless iPad on that day.

**I do not want any child or life debilitated when it is easily preventable with knowledge and precautions.** I contend that the wounded animal shrieking from that little girl may well be an acute example of the documented adverse effects that many students have endured (brain fog, lack of concentration, hyperactivity) when their chronic exposures are increased...but we must truly monitor and act on the truth rather than avoiding it. Dr Toril Jelter’s submitted testimony to the FCC and the *Environmental Health Trust et al v FCC* case helps open our eyes. This **is** an Imminent Hazard to the Public. It must change.

To conclude, the following are excerpts from the August 13<sup>th</sup> Ruling. They are included so that local officials, not familiar with it as this court is, should read and become informed, realize their fiduciary responsibilities have not been well supported by the FDA and other federal regulatory agencies.

#### [AUGUST 13<sup>TH</sup> RULING - \*Environmental Health Trust et al v FCC\*](#)

The August 13, 2021 federal DC Circuit Court ruling decisively stated the ways that the FCC had violated the Administrative Procedures Act (APA). Because of my experience as a lifelong educator, I particularly noticed that they failed to respond to the record evidence.

P9 – “When an agency in the Commission’s position is confronted with evidence that its current regulations are inadequate or the factual premises underlying its prior judgment have eroded, it must offer more to justify its decision to retain its regulations than mere conclusory statements.”

P9 - “Under this highly deferential standard of review, we find the Commission’s order arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission’s current limits **may cause negative health effects unrelated to cancer.**” (emphasis added)

P10 - “That failure undermines the Commission’s conclusions regarding the adequacy of its testing procedures, particularly as they relate to children, and its conclusions regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the implications of technological developments that have occurred since 1996, all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects. Accordingly, we find those conclusions arbitrary and capricious as well. Finally, we find the Commission’s order arbitrary and capricious in its complete failure to respond to comments concerning environmental harm caused by RF radiation. (emphasis added)

Petitioners point to multiple studies and reports, which were published after 1996 and are in the administrative record, purporting to show that RF radiation at levels below the Commission’s current limits causes negative health effects unrelated to cancer, such as reproductive problems and neurological problems that span from effects on memory to motor abilities.” (emphasis added)

The School District of Palm Beach County Florida is currently being sued because of an alleged poor application and overuse (sudden 56% increase beginning two years ago) of invoking the Baker Act to remove oddly behaving students who are disproportionately minority and disabled from school for an involuntary psychiatric evaluations. I hope they open their eyes and check out the possibility that such behavior and the sudden increase may be linked to an increase in classroom radiation exposures. Having only federal guidance to date that is based on false and misleading information has robbed these educators of fulfilling their fiduciary responsibilities. It has denied them full knowledge about how radiation can affect and also be mitigated for the well-being of their students. As an educator committed to Safe Schools and productive learning and well-being for our children and families, that is an outrageous and avoidable Imminent Hazard to the Public.

Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/Shirley Jackson

Shirley Jackson

12875 Barrow Road

North Palm Beach, FL 33408



## V. Laurie Brown

My name is Laurie Brown. I am submitting this declaration in an effort to compel the Food and Drug Administration to review all the scientific studies on biological harm caused by exposure to non-thermal levels of RadioFrequency (RF) radiation. Once reviewed, to set limits, to regulate, to establish proper protocols for measuring these exposures in real time, and to enforce human protective guidelines and standards to protect the public from physical harm caused by pulsating wireless devices emitting biologically disruptive radiation.

Despite the proliferation of wireless antennas, wireless devices, and the installation of cell towers and access points for Wi-Fi and wireless connectivity, no one is regulating and ensuring the public's safety and exposure to RF radiation. The current FCC guidelines are outdated and are only thermal based. The FDA needs to weigh in, acknowledge, and address the biological harm caused by the increasing and limitless saturation of wireless radiation in our environment. The public deserves to know the truth and to be protected from increasing exposures that cause biological harm, symptoms, and diseases, preventing individuals from working, attending school, and living a healthy and fulfilling life.

I taught middle school for the Los Angeles Unified School District (LAUSD) for approximately 26 years. I rarely was ill and accumulated approximately 800 hours of sick time during my career, the equivalent of nearly 7-8 months of work. I enjoyed a normal, healthy life and never had to concern myself with routers, Wi-Fi or electro-magnetic radiation. Unfortunately, my career, health, and life as I knew it changed in April 2015, when my school "upgraded" our Wi-Fi system and added 190 access points, two in every classroom, and brought in wireless devices, increasing the total wireless radiation on campus. My District did little to protect me from the peaks or spikes of radiation emitted from all the wireless devices on campus.

Our system was activated in April 2015. After a few hours on campus, I would begin to feel ill and experience symptoms such as headaches, heart palpitations, skin burning, earaches, nausea, foggy headedness, inability to concentrate, and many other debilitating symptoms – all symptoms of microwave sickness. I was becoming electro sensitive and was diagnosed with Chronic Inflammatory Response Syndrome caused by exposure to RF radiation. After a few consecutive days of work and increased exposure on campus, I started using my illness days. Some other staff members experienced physical and debilitating symptoms from the increased radiofrequencies on campus, too. My Principal contacted LAUSD's Office of Environmental Health and Safety (OEHS) and wrote to the Inspector General of LAUSD sharing his concern as well as staff members' concerns. The District's OEHS Initially waited approximately 6 weeks, until Common Core Testing was over, when fewer students would be operating devices and on campus with cell phones, to measure the RF frequencies in specific classrooms. On June 22, 2015, during the summer break, my principal wrote to LAUSD's Inspector General stating, "After the system was turned on, several employees complained of illness (headaches, light headedness, etc.)."

After the installation of the new commercial Wi-Fi system at my school and becoming ill from my exposure to EMF/EMR, I learned LAUSD had been **warned** by doctors and scientists,

prior to installation, that the commercial grade Wi-Fi being considered was untested and potentially dangerous in school environments.

As an example, a written rebuttal to LAUSD's plan was prepared by Cindy Sage, an EMF expert, environmental scientist, and co-editor of the Bioinitiative Report. Sage critiqued URS Corporation's evaluation and stated she could not support URS' conclusions regarding the safety of LAUSD's proposed Wi-Fi system because data supporting those conclusions was being withheld. In February 2017, Sage wrote the following to LAUSD:

“What LAUSD has created with its wireless classrooms is essentially the set-up of one of the **largest unsanctioned children's health experiments in US history**. No research institution would be given permission to do this without Institutional Review Board approval for conducting human experimentation in research. Children who attend LAUSD schools are being placed into classroom environments with pervasive exposures from wireless routers and devices, and for some of them, is likely to result in **permanent electro hypersensitivity characterized by chronic health and cognitive impairments**. The same is already true for some teachers who have sought accommodations due to their acquired hypersensitivity to wireless exposures.”(Emphasis added.)

“On March 13, 2013, the Executive Committee of the American Academy of Environmental Medicine wrote to LAUSD and stated, “it is unlikely that there are currently enough doctors in Los Angeles County familiar with the biological effects of microwave radiation to diagnose and treat the numbers of children who will potentially become symptomatic from exposure to your wireless system should you elect to install it. Statistics show that you can expect an immediate reaction in **3% of your students and time-delayed reactions in 30% of them. This will also include teachers**.”(Emphasis added.)

In my opinion, by using averages compared to “raw” data, the RF peaks/spikes students and staff are exposed to each day, every day, over the course of an entire school day or school year (cumulative effects of spikes and exposure), are mitigated and diluted **on paper**, likely creating, and providing a false sense of safety to the public, parents, staff, and students. Clearly, spikes, density, and time (duration) of exposure are important and should matter to those responsible for protecting the public and assuring safety measures.<sup>144</sup>

The FDA should not continue to ignore the overwhelming abundance of scientific studies proving biological harm caused by pulsed EMR/EMF/RF nor should they allow RF spikes to be

---

<sup>144</sup> Here is an example of LAUSD's RF protocol and evaluation: “Data was collected in general accordance with the URS monitoring protocol. This protocol standardizes the preparation and operation settings of the NARDA SRM 3006 (Selective Radiation Meter) monitoring device.”

“For the purpose of the evaluation, The **AVE** data set was evaluated and compared to the LAUSD adopted criterion. A combination of the magnitude and the duration of the energy bursts are integrated by the SRM-3006 to provide the **AVE** power density results which are **averaged** for **each** frequency. The **AVE** power density are lower than the Maximum power density results. The **average** of the **AVE** (**AVE-average**) of each measurement is used for comparison to the adopted criterion.” (Emphasis added.)

averaged and diluted over time. Medications are prescribed with specific instructions to minimize side effects and over dosing. The same safety precautions and concerns apply to overdosing on wireless radiation. More is not better and controls and guidelines are necessary. The FCC's old guidelines and school districts' RF protocols are not sufficient to protect children and the public. The FDA must address this immediate public health crisis. Protocols and protective measures must be developed and applied in real time, before it is too late.

Today, I no longer teach, something that was not only a career, but a great passion in my life. I loved teaching, found it stimulating, rewarding, and incredibly fulfilling. Because I enjoyed it so much, I intended to work for a lot longer, until a ripe old age, but I found it difficult to return to work without being reasonably accommodated. Unfortunately, I am unable to fill all my free time with meaningful activities and work due to the proliferation and installation of wireless antennas and devices everywhere. Therefore, I limit my time and exposure to RF radiation. Fortunately, my friends are willing to turn off their cell phones when they are out with me and in my home. My husband and I removed our Wi-Fi and cordless phones, turned off our wireless emitting devices, and use hardwired connections. I have a cell phone, but do not turn it on often and my husband mostly keeps his off around me. I know longer have the same freedom or luxury to enjoy limitless time out, travel, staying in a hotel, visiting family, and grocery shopping as I once did.

Living with Chronic Inflammatory Response Syndrome caused by EMFs (microwave sickness) is challenging and limiting. My quality of life has been severely reduced and none of it occurred by my choice. My health, lifestyle, quality of life, and freedom to come and go as I please have been drastically and negatively affected. In addition, my income and retirement have been significantly reduced. I am very fortunate to have a supportive and loving husband and family. Still, though, my condition and losses have impacted us.

Federal guidelines, limits, and protocols are needed to monitor and ensure the public's safety from exposure to wireless radiation. No longer can we ignore biological effects caused by pulsed, wireless radiation. Although it may be an inconvenient truth, more is dangerous and is very unhealthy. Too many people are already sick and more people will become seriously ill if we stand by and do nothing to address our chronic and limitless exposure to wireless radiation. I do not want others to suffer the same fate as me.

Under penalty of perjury I submit this declaration.

/s/Laurie Brown

Laurie Brown

4221 Noble Ave

Sherman Oaks, CA 91403



## **W. Ruth Fennesy Moss**

I am writing this declaration because of the failure of the Food and Drug Administration (FDA) to develop and promulgate science-based human exposure standards for all wireless devices, including cell phones, computers, routers, “smart” utility meters, 4G/5G antennas, cell phone towers and other wireless devices. This failure is causing severe physical, economic and mental harm to the American public, and I am one of the victims of the agency’s failure.

A digital utility meter has ruined my life. After a wireless Automated Meter Reading (AMR) device was installed on my house by my local utility in 2008, I began to experience dizziness, flu-like headaches, and a frequent racing heart. These symptoms slowly escalated over several years. Never did I suspect that the electric meter on the side of my house was the cause. When that possibility was presented to me by a friend on July 1, 2015, it seemed absurd.

Nonetheless, on that very day I went outside to study the meter. While standing directly in front of it so I could read the small type, I suddenly felt a horrific thud in my chest. From that moment on, I could no longer use my cellphone, portable phone, or be in Wi-Fi without experiencing an extreme version of the symptoms I already suffered from — headaches, dizziness, and heart palpitations. This direct confrontation with the meter made me know, without question, that my condition was linked to radiation exposures emanating from the digital meter on the side of my house.

What followed immediately was a nightmarish month of escalating, blinding headaches until I finally got the meter removed. I believe the only reason the AMR meter was replaced with a safe analog meter was that I had overheard a phone conversation between two utility employees discussing the possibility that people were getting sick from the meters and that the signals probably could be causing cancer — I had documented the entire conversation and had the names to prove it.

The headaches improved over the coming days but tragically, the sensitivities have never gone away. I can no longer use a cellphone which means I can’t call my family for any reason if I’m out of the house, The pain in my head would be too severe and would last for days. The same is true of using my portable phone inside the house. I use a landline on speaker mode only — because putting it up to my ear hurts.

Wi-Fi causes me overall nerve pain and dizziness so everything in our home is hard-wired. I cannot go to stores or restaurants that have high Wi-Fi signals. Recently, my best friend’s son got married and I couldn’t attend. When I do enter Wi-Fi, out of sheer necessity, it takes a few days to recover.

I can no longer use a computer. The only device I can view (only view) is an iPad (I’m grateful for that) but I cannot touch it and must sit at least 4 feet away. I use it mostly for Zoom meetings.

As I'm a writer and engaged in two huge projects, I must hire an assistant to type all my emails and creative pieces from dictation. I've tried countless treatments to recover, and will continue to do so, but as of yet, nothing has made a difference. In addition to the physical and practical burdens of bearing these symptoms, there is a tremendous financial burden. It's a money pit that doesn't seem to have a bottom.

In conclusion, the FDA's continued failure to protect the public from this clear and present danger is disrupting lives and causing severe physical harm, economic hardship and mental anguish to a large and growing number of Americans. It blows my mind that the country whose flag I saluted growing up would ever permit, let alone force, a known toxin to destroy my health, my life, and the lives of so many others.

Under penalty of perjury I swear the foregoing is true and correct.

/s/ Ruth F. Moss  
Ruth F. Moss

December 17, 2021



## **X. Courtney Kelly**

Between my first and second year of law school I underwent a double mastectomy after discovering breast cancer exactly where I had been tucking my cellphone. I would take mountain bike rides from my house up table mesa in Colorado and during those bike rides I would put my cellphone in my sports bra. I would listen to music and podcasts and take 4-5 hour bike rides. When I got home, I noticed a red mark on my breast where my cellphone was.

My oncologist ordered the 250 gene panel genetic testing and it came back negative and therefore believes ***it is something external, environmental that caused the breast cancer***. I am an attorney; I know how to read and research and the research is very alarming. It is unequivocal that the radiation from your cellphone can be carcinogenic, particularly when it is held up to or on your skin. There is just a concerted effort to keep the knowledge from the public.

I have been through grueling treatments. I have had a recurrence which is terribly frightening, and I live in fear that I won't conquer this cancer. I have two small children and worry that I will not live to see them grow into adulthood. I am currently still under treatment years later and the side effects make day-to-day living difficult.

**I hold our federal public health agencies responsible for allowing the public to believe these devices are safe, as well as the manufacturers who know of the dangers but do everything possible to keep that knowledge from the public.**

I declare under penalty of perjury that the foregoing is true and correct.

/s/ Courtney Kelley

Courtney Kelley  
6657 E. Dartmouth Avenue  
Denver, CO 80224

Executed on December 14, 2021



## Y. Margot Shaw

I am dying because the telecommunications industry has hidden the truth about the fact that cellphones cause cancer and put profits over the health and well-being of consumers, and the government agencies we depend on to protect public health have allowed this situation to exist without correction. I was led to believe the damned things were safe and they are not.

I developed a type of breast cancer that is not detected in mammograms or breast exams because I was led to believe cellphones are safe and clearly they are not as evidenced by *the 11 centimeter tumor, the size of my cellphone, exactly where I have been tucking it in my bra for years*. The tumor went undetected until the cancer had metastasized to my bones so there is no cure. My journey will be filled with pain and horror as the cancer eats away at my bones and travels throughout my body. Make no mistake, my cancer was caused by carrying and using my phone close to my body. I have no history of breast cancer in my family going back many generations so this is not a genetic issue and there simply is no other explanation when you consider size and location.

We have all been lied to by the cellphone manufacturers and misled by our public health agencies. I asked the apple experts why my iphone got so hot and was told it was nothing to worry about. The genius bar experts never said anything when I pulled my phone out of my sports bra , with the specially designed pocket to hold my phone, to show them how hot it was.

I now know that the industry has quashed research studies, manipulated data and promoted misinformation in the form of biased results from studies that they funded for over a decade resulting in countless women like me being misled. The American Cancer Society and Suzanne B Koman say there is no risk, but that opinion is based on the research that was funded by the industry. As a result women like me are dying from or battling breast cancer and countless more are at risk because they do not know.

The industry promotes cellphone usage to the point that it is now referred to as an addiction, all the while knowing and hiding the risks. I, like all users, came to rely on the phones so much so that I had to have it handy at all times. The countless apps that alert us to everything under the sun is proof that this was a campaign to addict for profit just like we saw with the cigarette industry. I, like everyone else used phones to keep track of finances, children, businesses and more. Apps that relax and entertain are more than abundant and pushed on us at every turn. Streaming while we exercise, drive and clean house has become the norm without any warnings about radiation and the risks.

The industry has overturned legislation that would have simply required that a warning be posted where every user would see it. (Berkley Right to know) Clearly the industry is concerned that people might curtail their usage if they were afraid of getting cancer. The government has failed to protect me and others as evidenced by last August's ruling in a case against the FCC which determined that they were capricious in ignoring the research.

As a result, I live with pain and the horrible side effects of treatment. I cannot live a normal life and must everyday try to muster the courage to plan for what is coming, wheel chairs , being bed

ridden and extreme pain. My loved ones will be burdened with watching helplessly as my body deteriorates and crumbles. The idea that my children will have to take care of me and watch me die a slow and terrible death is unbearable. My income has ended as I can no longer work and I must now rely on help from others when I should be helping them. I will not see my grandchildren grow into adults. The fear is all consuming and all of this was preventable.

I have lived a healthy active life only to be duped by an industry and abandoned by federal agencies that should be protecting us from dangerous companies and products.

I declare under penalty of perjury that the foregoing is true and correct.

/s/ Margot Shaw

Margot Shaw  
106 Vanita Drive  
Moon Twp, PA 15108

December 14, 2021



## XIV. APPENDIX 4 — Examples of Media’s Reliance on FDA

### MAJOR NEWS SERVICES

#### 1. Associated Press

*Audience:*

Associated Press, a worldwide nonprofit news agency, states that [more than 15,000 news outlets publish its coverage every day](#).

*Coverage:*

**Cancer from cellphones? New studies say no need to hang up**

February 2, 2018

<https://apnews.com/article/d8a5df8a466e40d58f41b65f843aba42>

*Key quote:*

The current safety limits for cellphones are acceptable for protecting the public health,” FDA radiation health chief Dr. Jeffrey Shuren said in a statement.

**Cross talk: Federal agencies clash on cellphone cancer risk**

November 1, 2018

<https://apnews.com/article/business-science-ap-top-news-us-news-health-4da5f1cdfd774af29143ff3f5ceffa0b>

*Key Quote:*

The FDA immediately disagreed, firing off a press release assuring Americans that “decades of research and hundreds of studies” has made the health agency confident that the current safety limits for cellphone radiation protect the public health.

Plus, FDA pointed out confusing findings from the rodent study — such as that the radiated rats lived longer than comparison rats that weren’t exposed to the rays. The toxicology agency said it appeared that the radiofrequency energy helped older rats’ kidneys.

#### 2. United Press International

*Audience:*

United Press International states that it “delivers an objective, continuously updated stream of breaking news from the United States and around the world at UPI.com, as well as digital, mobile, print and research licensing clients.”

*Coverage:*

**FDA: Magnets in cellphones, smartwatches may affect pacemakers**

May 16, 2021

[https://www.upi.com/Health\\_News/2021/05/16/FDA-warning-smartwatch-cellphone-battery-pacemaker/9371621186092/](https://www.upi.com/Health_News/2021/05/16/FDA-warning-smartwatch-cellphone-battery-pacemaker/9371621186092/)

*Key quote:*

The U.S. Food and Drug Administration is warning that strong magnets in some cellphones and smartwatches can interfere with pacemakers and other implanted medical devices.

## MAJOR CABLE AND BROADCAST NETWORKS

### 3. CNN

#### *Audience:*

CNN is an international cable news network with associated digital properties. It reaches more than 2 billion people, [according to a CNN factsheet](#). The network's digital site has 200 million unique visitors per month.

#### *Coverage:*

#### **Cell phone radiation study finds more questions than answers**

February 7, 2018

<https://www.cnn.com/2018/02/02/health/cell-phone-radiation-cancer-nih-study-bn/index.html>

#### *Key quote:*

"It's important to understand that – as is commonly done in these types of risk assessment studies – the study was designed to test levels of radio-frequency energy exposures considerably above the current safety limits for cell phones to help contribute to what we already understand about the effects of radio-frequency energy on animal tissue," Dr. Jeffrey Shuren, director of the FDA's Center for Devices and Radiological Health, said in a statement after the release of the reports.

"The current safety limits are set to include a 50-fold safety margin from observed effects of radio-frequency energy exposure. From the FDA's understanding of the NTP results, male rats that showed carcinogenic activity were exposed to a radio-frequency energy exposure rate that is much higher than the current safety standard," he said.

"Looking at the results in animals, the conclusions still require careful discussion, as our preliminary understanding of the NTP results is that the study found mostly equivocal, or ambiguous, evidence that whole-body radio-frequency energy exposures given to rats or mice in the study actually caused cancer in these animals."

#### **Federal health agencies disagree over link between cell phone radiation and cancer**

November 1, 2018

<https://edition.cnn.com/2018/11/01/health/cell-phone-radiation-cancer-nih-fda/index.html>

#### *Key quote:*

"After reviewing the study, we disagree, however, with the conclusions of their final report regarding 'clear evidence' of carcinogenic activity in rodents exposed to radiofrequency energy," Dr. Jeffrey Shuren, director of the FDA's Center for Devices and Radiological Health, said in a statement Thursday in response to the report.

One thing the two agencies, which both fall under the US Department of Health and Human Services, agree on is that the findings of these studies in rats and mice should not apply to human cell phone use.

#### 4. CBS News

*Audience:*

CBS News, a division of the CBS radio and television broadcast network, reports daily on national and worldwide news. [CBS News claims more than 1 billion visitors to its broadcast and digital venues each quarter.](#)

*Coverage:*

**Have a pacemaker? Keep your cell phone at least 6 inches away**

May 13, 2021

<https://www.cbsnews.com/news/pacemaker-iphone-smart-phone-cellphone-danger/>

*Key quote:*

Magnets used in portable devices including cellphones and smart watches may impair pacemakers and affect other implanted devices, the Food and Drug Administration warned Thursday.

#### 5. NBC News

*Audience:*

NBC News, a division of the NBC radio and television broadcast network, reports daily on national and worldwide news. [NBC Universal, the parent company, claims to be able to deliver 700 million people to advertisers](#), but does not break out audience size for NBC News on its website.

*Coverage:*

**Cellphone radiation may cause cancer in rats, report finds**

November 1, 2018

<https://www.nbcnews.com/health/health-news/final-report-says-cellphone-radiation-may-cause-cancer-rats-not-n929781>

*Key quote:*

“Based on our ongoing evaluation of this issue, the totality of the available scientific evidence continues to not support adverse health effects in humans caused by exposures at or under the current radiofrequency energy exposure limits,” Shuren said.

“We believe the existing safety limits for cell phones remain acceptable for protecting the public health.”

### MAJOR NEWSPAPERS AND ONLINE NEWS SITES

#### 6. USA Today

*Audience:*

USA Today is a nationally distributed newspaper which [claims a circulation of its print edition of 535,000 daily and 609,000 for its Friday/Weekend edition](#). Readers of the print

edition number 2.6 million. Gannett Co, Inc. owns USA Today and [more than 300 digital properties in 46 states which have more than 150 million visitors a month](#).

*Coverage:*

**Can cellphones cause cancer? 5 steps to minimize the risk**

July 22, 2021

<https://www.usatoday.com/story/tech/columnist/komando/2021/07/22/cancer-debate-5-steps-minimize-risk-cellphone-radiation/8000241002/>

*Key quote:*

While there's been no direct response to Berkeley's research, the Food and Drug Administration has long maintained that there's no consistent scientific evidence of health problems caused by exposure to the radiofrequency energy emitted by cellphones.

## 7. The Washington Post

*Audience:*

The Washington Post provides national and international coverage of news, business, sports and entertainment. [The Post claims 1.6 million readers of its print edition each week and 104 million unique visitors a month to its website](#).

*Coverage:*

**Cellphone radiation study finds mixed effects in rodents, without clear implications for human health**

February 2, 2018

<https://www.washingtonpost.com/news/to-your-health/wp/2018/02/02/cellphone-radiation-shows-mixed-effects-in-rodents-without-clear-implications-for-human-health/>

*Key quote:*

The Food and Drug Administration, which commissioned the study, released a statement describing “the mostly equivocal, or ambiguous, evidence that whole body radio-frequency energy exposures given to rats or mice in the study actually caused cancer in these animals.”

Jeffrey Shuren, director of the FDA’s Center for Devices and Radiological Health, noted that there were unusual findings in the study and said his team is continuing to assess them, but he emphasized that, based on all available scientific information, the agency does not believe there are adverse health effects in humans caused by cellphone radiation.

“Even with frequent daily use by the vast majority of adults, we have not seen an increase in events like brain tumors,” he said. “Based on this current information, we believe the current safety limits for cellphones are acceptable for protecting the public health.”

## 8. The New York Times

*Audience:*

The New York Times is a nationally distributed newspaper and online news site. [The outlet claims more than 6.1 million readers.](#)

*Coverage:*

**Cancer Risk From Cellphone Radiation Is Small, Studies Show**

February 2, 2018

<https://www.nytimes.com/2018/02/02/health/cell-phones-cancer.html>

*Key quote:*

The Food and Drug Administration issued a statement saying it respected the research by the toxicology program, had reviewed many other studies on cellphone safety, and had “not found sufficient evidence that there are adverse health effects in humans caused by exposures at or under the current radio-frequency exposure limits.”

The statement, from Dr. Jeffrey Shuren, director of the F.D.A.’s center for devices and radiological health, also said, “Even with frequent daily use by the vast majority of adults, we have not seen an increase in events like brain tumors.”

The Federal Communications Commission sets exposure limits for radio-frequency energy from cellphones, but relies on the F.D.A. and other health agencies for scientific advice on determining the limits, the statement said.

## 9. Chicago Tribune

*Audience:*

The Chicago Tribune, a daily newspaper based in Chicago, Illinois, [claims a Sunday circulation of 764,000 and 18 million visitors a month to its website.](#)

*Coverage:*

**We tested popular cellphones for radiofrequency radiation. Now the FCC is investigating.**

August 21, 2019

<https://www.chicagotribune.com/investigations/ct-cell-phone-radiation-testing-20190821-72qgu4nzlfd5kyuhteieh4da-story.html>

*Key quote:*

Despite the changing ways people use phones, both the FCC and FDA said the current exposure limit protects the public.

## 10. Star Tribune

*Audience:*

The Star Tribune, a daily newspaper based in Minneapolis, Minnesota, claims [1.4 million readers a week](#) and [7 million unique visitors a month to its website.](#)

*Coverage:*

**Researchers probing how magnets may disable medical devices**

July 23, 2021

<https://www.startribune.com/researchers-probing-how-magnets-may-disable-medical-devices/600080823/>

*Key quote:*

"We believe the risk to patients is low. ... However, the number of consumer electronics with strong magnets is expected to increase over time," Dr. Jeff Shuren, director of the Food and Drug Administration's medical device division, said in a statement following a broad study by the agency in May.

## 11. Los Angeles Times

*Audience:*

The Los Angeles Times, a daily newspaper based in Los Angeles, California, [claims more than 4.8 million readers weekly](#).

*Coverage:*

**Radiation from cellphones is not hazardous to your health, government scientists say**

February 2, 2018

<https://www.latimes.com/science/sciencenow/la-sci-sn-cell-phone-dangers-20180202-story.html>

*Key quote:*

In the nearly 20 years since that request, hundreds of studies by scientists at the NTP and elsewhere have allowed the FDA to say with confidence that "the current safety limits for cell phone radiation remain acceptable for protecting the public health," Dr. Jeffrey Shuren, director of the FDA's Center for Devices and Radiological Health, said in a statement.

"Even with frequent daily use by the vast majority of adults, we have not seen an increase in events like brain tumors," he added.

The FDA and the Federal Communications Commission share responsibility for regulating radiofrequency-emitting devices like wireless phones and televisions.

## 12. Newsweek

*Audience:*

Newsweek, a widely recognized weekly news magazine for decades, is now a heavily visited news and information website. [The site claims 72 million unique visitors a month](#).

*Coverage:*

**Do Cellphones Cause Cancer? Government Study Reveals 'Stunningly Important' Findings**

July 19, 2018

<https://www.newsweek.com/2018/07/27/cancer-cellphones-ntp-findings-toxicologists-brain-cancer-us-1024633.html>

*Key quote:*

Current cellphone safety regulations are based on a premise that is now arguably false: that cellphone radiation can cause harm only by heating tissue. The FDA, however, has no plans to strengthen the regulations. It has "confidence that the current safety limits for cellphone radiation remain acceptable for protecting

public health," said Dr. Jeffrey Shuren, director of the FDA's Center for Devices and Radiological Health, in a statement issued after the NTP's results were released. "We have not found sufficient evidence that there are adverse health effects in humans caused by exposures at or under the current radio-frequency energy exposure limits."

### 13. U.S. News and World Report

*Audience:*

U.S. News and World Report, a widely recognized weekly news magazine for decades, is now a heavily visited news and information website. [The site claims 42 million unique visitors a month.](#)

*Coverage:*

**Magnets in Cellphones, Smartwatches Might Affect Pacemakers, FDA Warns**

May 14, 2021

<https://www.usnews.com/news/health-news/articles/2021-05-14/magnets-in-cellphones-smartwatches-might-affect-pacemakers-fda-warns>

*Key quote:*

The U.S. Food and Drug Administration is warning that strong magnets in some cellphones and smartwatches can interfere with pacemakers and other implanted medical devices.

## MAJOR SCIENCE JOURNALS

### 14. MIT Technology Review

*Audience:*

MIT Technology Review describes itself as “a world-renowned, independent media company whose insight, analysis, reviews, interviews and live events explain the newest technologies and their commercial, social and political impacts.” [The site claims 5 million unique visitors a month.](#)

*Coverage:*

**No, there’s no evidence that cell phones give you cancer**

February 11, 2020

<https://www.technologyreview.com/2020/02/11/844856/no-theres-no-evidence-that-cell-phones-give-you-cancer/>

*Key quote:*

A new review from the FDA says it finds no evidence linking the two, but that research should continue.

### 15. Scientific American

*Audience:*

From the [Scientific American website](#):

“Scientific American covers the advances in research and discovery that are changing our understanding of the world and shaping our lives. Founded 1845, it is the oldest continuously published magazine in the United States and now **reaches more than 10**

**million people** around the world each month through its website, print and digital editions, newsletters and app.”

*Coverage:*

**New Studies Link Cell Phone Radiation with Cancer**

March 29, 2018

<https://www.scientificamerican.com/article/new-studies-link-cell-phone-radiation-with-cancer/>

*Key quote:*

In a February 2 statement, Jeffrey Shuren, director of the FDA’s Center for Devices and Radiological Health, wrote that despite the NTP study’s results, the combined evidence on RF exposure and human cancer—which by now amounts to hundreds of studies—has “given us confidence that the current safety limits for cell phone radiation remain acceptable for protecting the public health.”

## **MAJOR MEDICAL INFORMATION SITES**

### **16. WebMD**

*Audience:*

WebMD describes itself as a source of “credible information, supportive communities, and in-depth reference material about health subjects.” [The site claims that 1 in 3 U.S. adults use WebMD each month.](#)

*Coverage:*

**Cell Phones and Cancer Risk**

May 25, 2020

<https://www.webmd.com/cancer/cell-phones-cancer>

*Key quote:*

The FDA says that neither research results nor public health statistics have clearly shown that normal use of cellphones raises the risk of cancer.

### **17. Medscape**

*Audience:*

Medscape describes itself as “the leading online global destination for physicians and healthcare professionals worldwide, offering the latest medical news and expert perspectives.”

*Coverage:*

**FDA Warns Cell Phone, Smart Watch Magnets Can Affect Medical Devices**

May 13, 2021

<https://www.medscape.com/viewarticle/951089>

*Key quote:*

The US Food and Drug Administration (FDA) is recommending patients and caregivers keep cell phones and smart watches at least 6 inches away from implanted medical devices, such as pacemakers and defibrillators.

## **RESOLUTION 2020-38**

### **RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ENCINITAS, CALIFORNIA AMENDING CITY COUNCIL POLICY NO. C035 REGULATING SMALL WIRELESS FACILITIES AND OTHER INFRASTRUCTURE DEPLOYMENTS IN THE PUBLIC RIGHTS-OF-WAY AND ADOPTING A MASTER LICENSE AGREEMENT TEMPLATE AND SITE LICENSE FEE OF \$270**

**WHEREAS**, pursuant to the California Constitution, Article XI, Section 7; California Government Code Section 37100 and other applicable law, the City of Encinitas City Council may make and enforce within its limits all local, police, sanitary and other ordinances, resolutions and other regulations not in conflict with general laws;

**WHEREAS**, on August 21, 2019, the City Council adopted City Council Policy No. C035 under Resolution No. 2019-66, which established reasonable, uniform and comprehensive standards and procedures for small wireless facilities and other infrastructure deployment in the public rights-of-way, for the construction, installation, collocation, modification, operation, relocation and removal of such facilities within the City of Encinitas' territorial boundaries, consistent with and to the extent permitted under federal and California state law;

**WHEREAS**, in response to all comments received and considered at a subsequent Community Workshop held on September 23, 2019, on October 30, 2019, the City Council adopted an amended City Council Policy No. C035 under Resolution No. 2019-91;

**WHEREAS**, on October 30, 2019, City Council also directed staff to reevaluate certain provisions in the Policy related to ADA and FHAA accommodation, fire safety review, application reviews and insurance requirements, as well as consider additional revisions proposed by a community group known as "Stop 5G Encinitas";

**WHEREAS**, in response to staff's evaluation and consideration of the proposed revisions, the City Council desires to again amend City Council Policy No. C035 as more particularly described in **Exhibit "A"**, attached hereto and incorporated herein by this reference (the "**Amended Policy**"); and

**WHEREAS**, on June 10, 2020, the City Council held a public hearing to consider this Resolution and the Amended Policy and Master License Agreement (MLA) Template, at which the City Council received, reviewed and considered the staff report, written and oral testimony from the public and other information in the record.

**NOW, THEREFORE, BE IT RESOLVED, THE CITY OF ENCINITAS CITY COUNCIL  
HEREBY FINDS, DETERMINES AND RESOLVES AS FOLLOWS:**

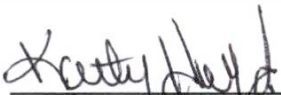
1. **Findings.** The City Council finds that: (a) the facts set forth in the recitals in this Resolution are true and correct and incorporated by reference; (b) the recitals constitute findings in this matter and, together with the staff report, other written reports, public testimony and other information contained in the record, are an adequate and appropriate evidentiary basis for the actions taken in this Resolution; (c) the provisions in this Resolution and the Amended Policy are consistent with the General Plan, Encinitas Municipal Code and applicable federal and state law; and (d) neither this Resolution nor the Amended Policy will be detrimental to the public interest, health, safety, convenience or welfare.

2. **Amended Policy.** The City Council hereby amends City Council Policy No. C035 as shown in the Amended Policy.
3. **Master License Agreement (MLA) Template and Site License Fee.** The City Council hereby adopts a Master License Agreement (MLA) Template and a Site License Fee of \$270 per year for each attachment to a municipality-owned structure in the public right-of-way.
4. **Environmental Review.** The City Council finds that, pursuant to CEQA Guidelines Section 15061(b)(3), there is no possibility that this project will have a significant impact on the physical environment. This Resolution merely authorizes amendments to City Council Policy C035 which regulates small wireless facilities and other infrastructure deployments. This Resolution does not directly or indirectly authorize or approve any actual changes in the physical environment. Applications for any new small wireless facility or other infrastructure deployment or change to an existing small wireless facility or other infrastructure deployment would be subject to additional environmental review on a case-by-case basis. Accordingly, the City Council finds that this Resolution is not subject to CEQA or, in the alternative, is exempt from CEQA under the general rule.
5. **Severability.** If any section, subsection, paragraph, sentence, clause, phrase or term (each a "Provision") in this Resolution or the Amended Policy, or any Provision's application to any person or circumstance, is held illegal, invalid or unconstitutional by a court of competent jurisdiction, all other Provisions not held illegal, invalid or unconstitutional, or such Provision's application to other persons or circumstances shall not be affected. The City Council declares that it would have passed this Resolution and the Amended Policy, and each Provision therein, whether any one or more Provisions be declared illegal, invalid or unconstitutional.
6. **Effective Date.** This Resolution and the Amended Policy will become immediately effective upon adoption by the City Council and will remain effective until amended, superseded or repealed by a separate resolution adopted by the City Council.
7. **Publication.** The City Clerk shall cause this Resolution and the Amended Policy to be published in electronic form on the City of Encinitas website, in physical form for public inspection at City of Encinitas City Hall and at least two other public places within the City of Encinitas and in any other manner required by law.

**PASSED, APPROVED and ADOPTED** on the 10<sup>th</sup> day of June, 2020, by the City Council of the City of Encinitas, State of California.

  
Catherine S. Blakespear, Mayor  
City of Encinitas

ATTEST:

  
Kathy Hollywood, City Clerk

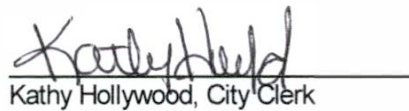
APPROVED AS TO FORM:



Leslie E. Devaney, City Attorney

CERTIFICATION: I, Kathy Hollywood, City Clerk of the City of Encinitas, California, do hereby certify under penalty of perjury that the foregoing Resolution was duly adopted at a regular meeting of the City Council on the 10<sup>th</sup> day of June, 2020 by the following vote:

AYES:	Blakespear, Hinze, Hubbard, Kranz, Mosca
NOES:	None
ABSENT:	None
ABSTAIN:	None



Kathy Hollywood, City Clerk

**EXHIBIT "A"**  
**AMENDED CITY COUNCIL POLICY C035**

(appears behind this coversheet)

**CITY OF ENCINITAS  
CITY COUNCIL POLICY  
ADMINISTRATIVE MANUAL**

**Policy Title:** Small Wireless Facilities

**Section:** City Council

**Responsible Department:** City Manager's Office

**Number:** C035

**Approved By:** City Council

**Date Approved:** 08/21/19 – Resolution No. 2019-66

**Dates Amended:** 10/30/19 – Resolution No. 2019-91

06/10/20 – Resolution No. 2020-38

---

**CONTENTS**

SECTION 1.	BACKGROUND AND INTRODUCTION .....	2
SECTION 2.	PURPOSE AND INTENT .....	2
SECTION 3.	DEFINITIONS .....	5
SECTION 4.	APPLICABILITY .....	7
SECTION 5.	REQUIRED PERMITS AND APPROVALS .....	8
SECTION 6.	APPLICATION AND REVIEW PROCEDURES .....	8
SECTION 7.	PUBLIC NOTICES .....	16
SECTION 8.	DECISIONS .....	17
SECTION 9.	CONDITIONS OF APPROVAL .....	18
SECTION 10.	LOCATION STANDARDS .....	29
SECTION 11.	DESIGN STANDARDS .....	32
SECTION 12.	PREAPPROVED DESIGNS .....	37
SECTION 13.	EXCEPTIONS .....	38

## SECTION 1. BACKGROUND AND INTRODUCTION

In 1996, Congress adopted the Telecommunications Act to balance the national interest in advanced communications services and infrastructure with legitimate local government authority to enforce zoning and other regulations to manage infrastructure deployments on private property and in the public rights-of-way. Under section 704, which applies to personal wireless service facilities, local governments retain all their traditional zoning authority subject to specifically enumerated limitations.<sup>1</sup> Section 253 preempts local regulations that prohibit or effectively prohibit telecommunication services (*i.e.*, common carrier services) except competitively neutral and nondiscriminatory regulations to manage the public rights-of-way and require fair and reasonable compensation.

Communication technologies have significantly changed since 1996. Whereas cell sites were traditionally deployed on tall towers and rooftops over low frequency bands that travel long distances, cell sites are increasingly installed on streetlights and utility infrastructure on new frequency bands that travel shorter distances. According to the Federal Communications Commission ("FCC") and the wireless industry, these so-called "small wireless facilities" or "small cells" are essential to the next technological evolution. The industry currently estimates that each national carrier will need to deploy between 30 and 60 small cells, connected by approximately 8 miles of fiber optic cable, per square mile.

On September 27, 2018, the FCC adopted a *Declaratory Ruling and Third Report and Order*, FCC 18-133 (the "*Small Cell Order*"), in connection with two informal rulemaking proceedings entitled *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, and *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*, WC Docket No. 17-84. In general, the *Small Cell Order*: (1) restricts the fees and other compensation state and local governments may receive from applicants; (2) requires all aesthetic regulations to be reasonable, no more burdensome than those applied to other infrastructure deployments, objective and published in advance; (3) mandates that local officials negotiate access agreements, review permit applications and conduct any appeals within significantly shorter timeframes; and (4) creates new evidentiary presumptions that make it more difficult for local governments to defend themselves if an action or failure to act is challenged in court. The regulations adopted in the *Small Cell Order* significantly curtail the local authority over wireless and wireline communication facilities reserved to State and local governments under sections 253 and 704 in the Telecommunications Act.

The City of Encinitas ("City"), nevertheless, retains "broad authority to determine, for purposes of the public health, safety, and welfare, the appropriate uses of land within a local jurisdiction's borders", *T-Mobile West LLC v. City & County of San Francisco*, 438 P.3d 1107 (Cal. 2019), including all zoning powers that are not specifically preempted by federal law, *T-Mobile S., LLC v. City of Roswell*, 574 U.S. 293 (2015).

## SECTION 2. PURPOSE AND INTENT

- (a) The City of Encinitas City Council ("City Council"), in keeping with the mission and values of City of Encinitas "to serve the people by protecting life, property and the environment", recognizes that this coastal city is one of the most beautiful cities in California, known for its beaches, ocean views, and stewardship in ecological preservation, which all serve as

<sup>1</sup> Local zoning regulations cannot prohibit or effectively prohibit personal wireless services, unreasonably discriminate among functionally equivalent services or regulate based on environmental impacts from radiofrequency ("RF") emissions. In addition, local decisions must be made within a reasonable time and any denial requires a written decision based on substantial evidence in the written record.

a draw for tourists, which is a boon to the local economy. Encinitas has become a microcosm of natural beauty with the vistas of the Pacific Ocean to our west, the San Elijo Lagoon ecological reserve and its estuaries to the south, and mountain views to the east. Encinitas possesses world-famous beaches which draw surfing competitions making Encinitas a year-round tourist destination of distinction. Encinitas has always been an environmentally-minded city protecting the ocean and its pristine beaches, the inland waterways, and the natural habitat. To incrementally achieve increased beautification, the City has a general policy of requiring the undergrounding of new utilities (see Muni. Code § 23.36.120). Encinitas is proud to have protected its scenic beauty along the coast, with both elements serving to promote tourism in the area. Along historic Route 101 and throughout the city there are architectural reminders that Encinitas is taking care to preserve historic landmarks in as close to their original state as possible.

- (b) The City of Encinitas (the "City") intends this Policy to establish reasonable, uniform and comprehensive standards and procedures for small wireless facilities deployment, construction, installation, collocation, modification, operation, relocation and removal within the City's territorial boundaries, consistent with and to the extent permitted under federal and California state law. The standards and procedures contained in this Policy are intended to, and should be applied to, protect and promote public health, safety and welfare, and balance the benefits that flow from robust, advanced wireless services with the City's local values, which include without limitation the aesthetic character of the City, its neighborhoods and community. This Policy is also intended to reflect and promote the community interest by (1) ensuring that the balance between public and private interests is maintained; (2) protecting the City's visual character (particularly in residential zones, open spaces, primary public viewsheds and areas with community and civic character) from potential adverse impacts, clutter and/or visual blight created or exacerbated by small wireless facilities and related communications infrastructure; (3) protecting and preserving the City's environmental resources; (4) protecting and preserving the City's public rights-of-way and municipal infrastructure located within the City's public rights-of-way; and (5) promoting access to high-quality, advanced wireless services for the City's residents, businesses and visitors.
- (c) Notwithstanding the forgoing objectives, Section 704 of the Telecommunications Act of 1996 as interpreted by court decisions and FCC rules prohibit the City from taking into consideration the potential health effects and environmental consequences of RF radiation emissions from wireless facilities that are compliant with FCC standards. The City is nevertheless aware of an increasing body of scientific research documenting biological and environmental damage from RF radiation at levels below FCC limits. Peer reviewed studies have reported biological damage, including but not limited to genotoxicity, carcinogenicity, neurotoxicity in humans and animals, brain and heart cancer, autoimmune disease, DNA damage, mitochondrial damage, brain damage, breakdown of the brain's protective blood brain barrier, infertility and insomnia at levels below FCC limits. The City has growing concerns that the RF standards set by the FCC may not adequately protect public health and safety.
- (d) This Policy is intended to establish clear procedures for application intake and completeness review. The City of Encinitas City Council finds that chronically incomplete applications significantly contribute to unreasonable delay and create barriers to infrastructure deployment. Chronically incomplete applications unfairly prejudice other applicants who may be prepared to submit complete applications for infrastructure in the same or substantially the same location. Chronically incomplete applications also unfairly prejudice the City's ability to act on such applications within the "presumptively

reasonable” timeframes established by the FCC. The provisions in this Policy afford applicants and City staff opportunities for direct, real-time communication about completeness issues to mitigate incomplete applications prior to submittal. The provisions in this Policy also encourage applicants to timely respond to incomplete notices.

- (e) This Policy is intended to establish regulations, standards and guidelines for all infrastructure deployments unless specifically prohibited by applicable law. For example, the City Council recognizes that certain state safety regulations, like the CPUC’s General Order 95, require equipment on joint utility poles to be installed or separated from other equipment in ways that may result in larger or bulkier installations than the City would otherwise prefer. This Policy has been designed to mitigate those potential aesthetic impacts to the extent possible without violating those health and safety regulations. The City Council also recognizes that different infrastructure deployments may be managed through other mechanisms, such as franchise or license agreements. Although such deployments may be exempt from the “ROW administrative design review permit” established in this Policy, the City official or department that administers such deployment shall, to the extent consistent with applicable law, apply the same regulations, standards and guidelines, including but not limited to the restrictions and preferences in Section 10, to the permit or other approval issued in connection with a request for authorization under such franchise, license or other agreement. The City Council also recognizes that different infrastructure deployments may have different impacts on the public rights-of-way that require different regulations, standards or guidelines to protect public health, safety and welfare. However, to the extent that different regulations, standards or guidelines are applied to small wireless facilities or other infrastructure deployments, the City Council intends that they be no more burdensome than the other when viewed under the totality of the circumstances.
- (f) This Policy is not intended to, nor shall it be interpreted or applied to: (1) prohibit or effectively prohibit any personal wireless service provider’s ability to provide personal wireless services; (2) prohibit or effectively prohibit any entity’s ability to provide any telecommunications service, subject to any competitively neutral and nondiscriminatory rules, regulations or other legal requirements for rights-of-way management; (3) unreasonably discriminate among providers of functionally equivalent personal wireless services; (4) deny any request for authorization to place, construct or modify personal wireless service facilities on the basis of environmental effects of radio frequency emissions to the extent that such wireless facilities comply with the FCC’s regulations concerning such emissions; (5) prohibit any collocation or modification that the City may not deny under federal or California state law; (6) impose any unreasonable, discriminatory or anticompetitive fees that exceed the reasonable cost to provide the services for which the fee is charged; or (7) otherwise authorize the City to preempt any applicable federal or California law.
- (g) However, many aspects of the Small Cell Order are under current legal challenge and Congressional bills are under consideration that may, in the future, afford the City additional authority over the approval and siting of wireless facilities. The City therefore intends to retain the ability to regulate existing and future wireless facilities, including any approved by this Policy, and minimize the permanent effect of potentially temporary legal restraints.
- (h) Due to the possibility of rapid and unforeseeable developments in telecommunication technology and customer preferences, and the long-term adverse aesthetic clutter of numerous wireless facilities, the City intends to conduct the roll out of new wireless

facilities in a methodical and measured manner to ultimately permit no more facilities than necessary to provide personal wireless services to the community.

- (i) This Policy is not intended to limit or prejudice any individual's ability to seek a reasonable accommodation under the Americans with Disabilities Act, the Fair Housing Act Amendments of 1988, or any other similar federal or state law due to electromagnetic sensitivity or symptoms based on exposure to radio frequency emissions.

### **SECTION 3. DEFINITIONS**

The definitions in this Section 3 shall be applicable to the terms, phrases and words in this Policy. Undefined terms, phrases or words will have the meanings assigned to them in 47 U.S.C. § 153 or, if not defined therein, will have the meaning assigned to them in Encinitas Municipal Code or, if not defined in either therein, will have their ordinary meanings. If any definition assigned to any term, phrase or word in this Section 3 conflicts with any federal or state-mandated definition, the federal or state-mandated definition will control.

**"accessory equipment"** means equipment other than antennas used in connection with a small wireless facility or other infrastructure deployment. The term includes "transmission equipment" as defined by the FCC in 47 C.F.R. § 1.6100(b)(8), as may be amended or superseded.

**"antenna"** means the same as defined by the FCC in 47 C.F.R. § 1.6002(b), as may be amended or superseded.

**"batched application"** means more than one application submitted at the same time.

**"collector road"** means four-lane undivided roadway, with a typical right-of-way width of 70-84 feet and a curb-to-curb pavement width of approximately 64 feet. A collector road's function is to distribute traffic between local streets and major and prime arterials. Although some collector roads serve as through routes, their primary function is to provide access from surrounding land uses. The term "collector road" as used in this Policy is defined in the Encinitas General Plan, Circulation Element, page C-18.

**"collocation"** means the same as defined by the FCC in 47 C.F.R. § 1.6002(g), as may be amended or superseded, which defines that term as mounting or installing an antenna facility on a pre-existing structure and/or modifying a structure for the purpose of mounting or installing an antenna facility on that structure. For clarification, the FCC defines the term "collocation" in two contexts, one for small wireless facilities in 47 C.F.R. § 1.6002(g) and another for requests pursuant to Section 6409 in 47 C.F.R. § 1.6100(b)(2). This Policy uses the term "collocation" as defined for small wireless facilities unless expressly provided otherwise.

**"CPUC"** means the California Public Utilities Commission established in the California Constitution, Article XII, § 5, or its duly appointed successor agency.

**"decorative pole"** means any pole that includes decorative or ornamental features, design elements and/or materials for aesthetic purposes.

**"Director"** means the Director of Development Services Department or the Director's designee.

**"FCC"** means the Federal Communications Commission or its duly appointed successor agency.

**"FCC Shot Clock"** means the FCC's interpretation of presumptively reasonable time frame,

accounting for any tolling or extension, within which the City generally must act on a request for authorization in connection with a personal wireless service facility, as such time frame is defined by the FCC and as may be amended or superseded. In the event that the FCC Shot Clock becomes inapplicable or are extended for any reason, the timetables provided in this Policy, to the extent determined by the FCC Shot Clock, shall also automatically become inapplicable or extended.

**“local street”** means streets designed to provide access to individual parcels in the City. Local streets consist of two lanes with a typical right-of-way width of 50-70 feet and a pavement width of 40 feet. The term “local street” as used in this Policy is defined in the Encinitas General Plan, Circulation Element, page C-18.

**“major arterial”** means a four-lane divided roadway, with a typical right-of-way width of 85-120 feet and a curb-to-curb pavement width of approximately 80 feet. The term “major arterial” as used in this Policy is defined in the Encinitas General Plan, Circulation Element, page C-18.

**“ministerial permit”** means any City-issued non-discretionary permit required to commence or complete any construction or other activity subject to the City’s jurisdiction. Ministerial permits may include, without limitation, any building permit, construction permit, electrical permit, encroachment permit, excavation permit, right-of-way utility permit, right-of-way construction permit, traffic control permit and/or any similar over-the-counter approval issued by the City’s departments.

**“OTARD”** means an “over-the-air reception device” and includes all antennas and antenna supports covered by 47 C.F.R. § 1.4000(a)(1), as may be amended or superseded.

**“personal wireless services”** means the same as defined in 47 U.S.C. § 332(c)(7)(C)(i), as may be amended or superseded.

**“personal wireless service facilities”** means the same as defined in 47 U.S.C. § 332(c)(7)(C)(i), as may be amended or superseded.

**“persons entitled to notice”** means the record owners and legal occupants of all properties within 500 feet from the proposed project site. Notice to the legal occupants shall be deemed given when sent to the property’s physical address.

**“prime arterial”** means a six-lane divided roadway, with a typical right-of-way width of 120-130 feet and curb-to-curb pavement width of 100-110 feet. The term “prime arterial” as used in this Policy is defined in the Encinitas General Plan, Circulation Element, page C-16.

**“prohibited support structure”** means any support structure on which the City prohibits the deployment of wireless facilities, except when authorized as a pre-approved design pursuant to this Policy. Prohibited support structures include decorative poles; traffic signal poles, cabinets or related structures; new, nonreplacement wood poles; and any utility pole scheduled for removal within 18 months from the time the Director acts on the ROW application for such pole.

**“public right-of-way” or “public rights-of-way”** means land or an interest in land which by deed, conveyance, agreement, easement, dedication, usage or process of law is reserved for or dedicated to or open to the use by the general public for road or highway purposes. The term does not include private or public utility easements unless such easement is reserved for or dedicated to or open to the use by the general public for road or highway purposes.

"RF" means radio frequency or electromagnetic waves.

"**Section 6409**" means Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, codified as 47 U.S.C. § 1455(a), as may be amended or superseded.

"**shot clock days**" means calendar days counted toward the presumptively reasonable time under the applicable FCC Shot Clock. The term "shot clock days" does not include any calendar days on which the FCC Shot Clock is tolled (i.e., "paused"). As an illustration and not a limitation, if an applicant applies on April 1, receives a valid incomplete notice on April 5 and then resubmits on April 20, only four "shot clock days" have elapsed because the time between the incomplete notice and resubmittal are not counted.

"**small wireless facility**" means the same as defined by the FCC in 47 C.F.R. § 1.6002(l), as may be amended or superseded, and does not include any strand-mounted facilities commonly installed on a strand, cable or line strung between one or more support structures.

"**support structure**" means a "structure" as defined by the FCC in 47 C.F.R. § 1.6002(m), as may be amended or superseded.

"**technically infeasible**" means a circumstance in which the applicant has demonstrated by applicable clear and convincing evidence (photos, technical data, etc.) that compliance with a specific requirement within this Policy is physically impossible and not merely more difficult or expensive than a noncompliant alternative. For example, the existence of a lease, lease option or other agreement shall not be deemed to make other locations not subject to such agreements technically infeasible.

"**underground utility district**" means any area in the City within which overhead wires, cables, cabinets and associated overhead equipment, appurtenances and other improvements are either (1) prohibited by ordinance, resolution or other applicable law; (2) scheduled to be relocated underground within 18 months from the time an application is submitted; or (3) primarily located underground at the time an application is submitted.

#### **SECTION 4. APPLICABILITY**

- (a) **Small Wireless Facilities.** Except as expressly provided otherwise, the provisions in this Policy shall be applicable to all existing small wireless facilities and all applications and requests for authorization to construct, install, attach, operate, collocate, modify, reconstruct, relocate, remove or otherwise deploy small wireless facilities within the public rights-of-way within the City's jurisdictional and territorial boundaries. The provisions of this Policy shall apply to any applications received prior to the effective date of this Policy to the extent permitted under applicable laws.
- (b) **Other Infrastructure Deployments.** To the extent that other infrastructure deployments, including without limitation any deployments that require approval pursuant to Encinitas Municipal Code Chapter 15.04, involve the same or substantially similar structures, apparatus, antennas, equipment, fixtures, cabinets, cables or improvements, the Director or other official responsible to review and approve or deny requests for authorization in connection with such other infrastructure deployment shall apply the provisions in this Policy unless specifically prohibited by applicable law.

- (c) **City's Proprietary Capacity.** This Policy shall not limit the authority of the City to refuse or otherwise condition approval of installation of a wireless facility on City property in its proprietary capacity.

## **SECTION 5. REQUIRED PERMITS AND APPROVALS**

- (a) **ROW Administrative Design Review Permit.** A "ROW administrative design review permit" ("permit"), subject to the Director's review and approval in accordance with this Policy, shall be required for all small wireless facilities and other infrastructure deployments located in whole or in part within the public rights-of-way.
- (b) **Exemptions.** Notwithstanding anything in this Policy to the contrary, a ROW administrative design review permit shall not be required for:
  - (1) wireless facilities or other infrastructure deployments owned and operated by the City for its use;
  - (2) OTARD facilities; or
  - (3) requests for approval to collocate, replace or remove transmission equipment at an existing wireless tower or base station submitted pursuant to Section 6409.
- (c) **Other Permits and Approvals.** In addition to a ROW administrative design review permit, the applicant must obtain all other permits and regulatory approvals as may be required by any other federal, state or local government agencies, which includes without limitation any ministerial permits and/or other approvals issued by other City departments or divisions. All applications for ministerial permits submitted in connection with a proposed small wireless facility or other infrastructure deployment must contain a valid ROW administrative design review permit issued by the City for the proposed facility. Any application for any ministerial permit(s) submitted without such ROW administrative design review permit may be denied without prejudice. Any ROW administrative design review permit granted under this policy shall remain subject to all lawful conditions and/or legal requirements associated with such other permits or approvals. Furthermore, and to avoid potential confusion, an exemption from the ROW administrative design review permit requirement under Subsection 5(b) does not exempt the same wireless facilities or other infrastructure deployments from any other permits or approvals, which includes without limitation any ministerial permits from the City.

## **SECTION 6. APPLICATION AND REVIEW PROCEDURES**

- (a) **Application Requirements for Small Wireless Facilities.** In addition to any other publicly stated requirements, all ROW administrative design review permit applications for small wireless facilities must include the following information and materials:
  - (1) **Application Form.** The applicant shall submit a complete, duly executed ROW administrative design review permit application on the then-current form prepared by the City. The applicant shall state which FCC Shot Clock it asserts will apply to the proposed project and explain the basis for its assertion.
  - (2) **Application Fee.** The applicant shall submit the applicable ROW administrative design review permit application fee adopted by City Council resolution. Batched

applications must include the applicable ROW administrative design review permit application fee for each small wireless facility in the batch. If no ROW administrative design review permit application fee has been adopted, then the applicant must submit a signed written statement that acknowledges that the applicant will be required to submit a deposit estimated by the Director to reimburse the City for its reasonable costs incurred in connection with the application. Should the deposit be inadequate an additional deposit shall be required. If the deposit exceeds the actual costs, the difference will be returned to the applicant.

- (3) **Construction Drawings.** The applicant shall submit true and correct construction drawings, prepared, signed and stamped by a licensed or registered engineer, that depict all the existing and proposed improvements, equipment and conditions related to the proposed project, which includes without limitation any and all poles, posts, pedestals, traffic signals, towers, streets, sidewalks, pedestrian ramps, driveways, curbs, gutters, drains, handholes, manholes, fire hydrants, equipment cabinets, antennas, cables, trees and other landscape features. The construction drawings must: (i) contain cut sheets that contain the technical specifications for all existing and proposed antennas and accessory equipment, which includes without limitation the manufacturer, model number and physical dimensions; (ii) identify all potential support structures within 500 feet from the proposed project site and call out such structures' overall height above ground level; (iii) depict the applicant's preliminary plan for electric and data backhaul utilities, which shall include the anticipated locations for all conduits, cables, wires, handholes, junctions, transformers, meters, disconnect switches, and points of connection; and (iv) demonstrate that proposed project will be in full compliance with all applicable health and safety laws, regulations or other rules, which includes without limitation all building codes, fire codes, electric codes, local street standards and specifications, and public utility regulations and orders.
- (4) **Site Survey.** For any small wireless facility, the applicant shall submit a survey prepared, signed and stamped by a licensed or registered engineer. The survey must identify and depict all existing boundaries, encroachments and other structures within 75 feet from the proposed project site and any new improvements, which includes without limitation all: (i) traffic lanes; (ii) all private properties and property lines; (iii) above and below-grade utilities and related structures and encroachments; (iv) fire hydrants, roadside call boxes and other public safety infrastructure; (v) streetlights, decorative poles, traffic signals and permanent signage; (vi) sidewalks, driveways, parkways, curbs, gutters and storm drains; (vii) benches, trash cans, mailboxes, kiosks and other street furniture; and (viii) existing trees, planters and other landscaping features.
- (5) **Photo Simulations.** The applicant shall submit site photographs and photo simulations that show the existing location and proposed small wireless facility in context from at least three vantage points within the public streets or other publicly accessible spaces, together with a vicinity map that shows the proposed site location and the photo location for each vantage point. At least one simulation must depict the small wireless facility from a vantage point approximately 50 feet from the proposed support structure or location. The photo simulations and vicinity map shall be incorporated into the construction plans submitted with the application. The photo simulations must show all required elements of the facility that will be visible and shall be based on actual site photographs.

- (6) **Project Narrative and Justification.** The applicant shall submit a written statement that explains in plain factual detail whether and why the proposed facility qualifies as a "small wireless facility" as defined by the FCC in 47 C.F.R. § 1.6002(l). A complete written narrative analysis will state the applicable standard and all the facts that allow the City to conclude the standard has been met—bare conclusions not factually supported do not constitute a complete written analysis. As part of the written statement the applicant must also include (i) whether and why the proposed support is a "structure" as defined by the FCC in 47 C.F.R. § 1.6002(m); (ii) whether and why the proposed wireless facility meets each required finding for a ROW administrative design review permit as provided in Subsection 8(b); (iii) analysis of all other technically feasible locations within or without the City that could serve the area intended to be served by the facility; (iv) an inventory of existing support structures within 500 feet of the location of the proposed site; (v) if the applicant is not a wireless carrier, demonstrate a bona fide plan to actually deploy facilities by the applicant for a specific third-party wireless tenant; (vi) identification of each proposed lessee or owner of an antenna to be installed on the facility; and (vii) a written report from a recognized fire safety specialist that describes the potential fire hazards posed by the facility to surrounding vegetation and/or structures, and any steps taken by the applicant to mitigate such hazards.
- (A) **Master Plan.** The project narrative shall also include a statement as to any other planned deployments by the applicant within the City over the next 24-month period from the date of submittal. The master plan shall visually depict all anticipated site locations and be accompanied by list of proposed facilities including type of technology (cellular, PCS, ESMR, etc.), type of service to be provided and purpose of the facility, anticipated date of installation, address and zoning district of each site and site size and topography, number of antennae and base stations per site and per carrier, location (pole, roof, etc.) and type of antennae on each site, identity of carriers that will occupy each site, any restrictions imposed by site owner, RF range and wattage output of equipment, height of equipment, and properties and rights of ways from which facilities will be visible. The master plan list shall be provided to the City in a digital form in an Excel (or equivalent) spreadsheet.
- (B) **Compliance with NEPA.** All applications shall include confirmation that an environmental assessment, or other application determination, has been completed by or on behalf of the FCC for any facility proposed in a location identified in 47 C.F.R. 1.307 (including a floodplain) or as otherwise required by National Environmental Policy Act.
- (7) **RF Compliance Report.** The applicant, and each intended owner or operator of an antenna to be installed on the site, shall submit an RF exposure compliance report that certifies under penalty of perjury that the proposed small wireless facility, both individually and cumulatively with all other emitters that contribute more than five percent to the cumulative emissions in the vicinity (if any), will comply with applicable federal RF exposure standards and exposure limits. The RF report must be prepared and certified by an RF engineer acceptable to the Director. The RF report must include the actual frequency bands and power levels (in watts effective radiated power) for all existing and proposed antennas at the site and exhibits that show the location and orientation of all transmitting antennas

and the boundaries of areas with RF exposures in excess of the uncontrolled/general population limit (as that term is defined by the FCC) and also the boundaries of areas with RF exposures in excess of the controlled/occupational limit (as that term is defined by the FCC). Each such boundary shall be clearly marked and identified for every transmitting antenna at the project site. If the applicant submits a batched application, a separate RF report shall be prepared for each facility associated with the batch. All RF compliance reports and the selection of circumference of the vicinity subject to testing shall be reviewed and confirmed by a qualified professional retained by the City pursuant to paragraph (h) below.

- (8) **Regulatory Authorization.** The applicant shall submit evidence of the applicant's regulatory status under federal and California law to provide the services and construct the small wireless facility proposed in the application.
- (9) **Pole License Agreement.** For any small wireless facility proposed to be installed on any structure owned or controlled by the City and located within the public rights-of-way, the applicant shall submit an executed Pole License Agreement on a form prepared by the City that states the terms and conditions for such non-exclusive use by the applicant. No changes shall be permitted to the City's Pole License Agreement except as may be indicated on the form itself. Any unpermitted changes to the City's Pole License Agreement shall be deemed a basis to deem the application incomplete. Refusal to accept the terms and conditions in the City's Pole License Agreement shall be an independently sufficient basis to deny the application without prejudice.
- (10) **Property Owner's Authorization.** The applicant must submit a written authorization from the support structure owner(s) that authorizes the applicant to submit and accept a ROW administrative design review permit in connection with the subject structure.
- (11) **Acoustic Analysis.** The applicant shall submit an acoustic analysis prepared and certified by a licensed engineer for the proposed small wireless facility and all associated equipment including all environmental control units, sump pumps, temporary backup power generators and permanent backup power generators demonstrating compliance with the City's noise regulations. The acoustic analysis must also include an analysis of the manufacturers' specifications for all noise-emitting equipment and a depiction of the proposed equipment relative to all adjacent property lines.
- (12) **Structural Analysis.** The applicant shall submit a report prepared and certified by an engineer licensed by the State of California (or other qualified personnel acceptable to the City) that evaluates whether the underlying pole or support structure has the structural integrity to support all the proposed equipment and attachments. At a minimum, the analysis must be consistent with all applicable requirements in CPUC General Order 95 (including, but not limited to, load and pole overturning calculations), the National Electric Safety Code, the standards and practices required for an ANSI/TIA-222 Maintenance and Conditions Assessment (under the most current revision at the time of submittal) and any safety and construction standards required by law and the utility provider. The

report shall contain tolerances including but not limited to guy tensions if applicable, plumb, twist, slip splices and take-up devices.

- (A) Residents of the City increasingly rely on wireless service (texting, voice, VOIP) to receive emergency notifications and communicate with family members during emergencies. Therefore, wireless facilities must be designed to remain resilient during outages, earthquakes and extreme weather events. Consequently, applicants shall (1) provide a certificate from a structural engineer licensed by the State, or other appropriate licensed professional acceptable to the Director, that (i), when fully loaded with antennas, transmitters, and other equipment and camouflaging the facility is designed to withstand the forces expected during the maximum credible earthquake and maximum credible wind speeds, and (ii) components, and the all connections between various components of the facility and with necessary power and utility lines, are designed to be protected against damage by "100-year" flooding, historical maximum ambient temperature sustained over the maximum credible duration, area maximum credible high wind, maximum credible earthquake, lightning strike and power surge events; (2) provide a diagram detailing buildings and other features located in fall zones or launch distances of components in the event of facility failure due to high wind or ground movement; (3) detailed description of measures taken on a network-wide basis, including backup power coverage for a portion of regional macro facilities, to ensure that basic communication service is available in the event of a disaster or power loss; (4) detailed description of the failure or outage history of facility components or similar systems (such as during SDG&E and PG&E power shutoffs in October and November 2019) operated by the operator on whose behalf the application is submitted; and (5) detailed description of hazards posed by the facility in the event of failure due to flood, high wind, high heat, earthquake, outage, lightning strike or wildfire.
- (13) **Environmental Impact Assessment.** The applicant shall submit an environmental impact assessment on the then-current form prepared by the City to determine whether the proposed project is categorically exempt under Article 19 of the CEQA Guidelines, or whether the proposed project will require a Negative Declaration, Mitigated Negative Declaration or an Environmental Impact Report.
- (14) **Landscape Plan.** A landscape plan shall be submitted with project application submittal indicating all existing vegetation that is to be retained on the site and any additional vegetation that is needed to satisfactorily screen the facility from adjacent land uses in public view areas. That landscape plan shall conform to all the requirements set forth in this Policy and the City landscape guidelines manual as required by City of Encinitas Municipal Code Section 23.24.190 as they may be amended or superseded. The landscape plan shall also include a tree protection plan prepared by a certified arborist and specify measures to protect trees during project construction and/or improvement.
- (15) **Exception Request.** Any application that involves a request for an exception pursuant to Section 13 of this Policy shall include a written statement in a separate document that includes all the following information: (i) whether the applicant seeks an exception pursuant to Subsections 13(b)(1), 13(b)(2) or both; (ii) the specific provision(s) and/or requirement(s) in this Policy from which the applicant seeks an

exception; (iii) the specific provision(s) of federal or state law under which the applicant seeks an exception; (iv) the standard of evidence applicable to each specific provision(s) of federal or state law under which the applicant seeks an exception; (v) a statement of the factual evidence that supports the findings for the exception requested; (vi) a statement that describes the extent of the exception required and the factual evidence to show the exception would be narrowly tailored in compliance with Subsection 13(g); and (vii) any other information the applicant believes relevant to the issues raised in the exception request. Given the short timeframe in which the City must review the application and the deployment volume anticipated by both the FCC and wireless industry, this written statement must be included with the **initial submittal** to afford City staff a reasonable time to act on the application. Any request by the applicant to consider an exception after the initial submittal shall be treated as a new application.

- (16) **Truth and Accuracy Statement.** Any application submitted pursuant to this Policy shall be signed by the applicant, or a person knowledgeable about the proposed facility and authorized to act on the applicant's behalf, attesting, that under penalty of perjury, that all information, representations and disclosures in the application are true, correct and complete.

(b) **Voluntary Pre-submittal Meetings.**

- (1) **Pre-submittal Conference.** The City strongly encourages, but does not require, applicants to schedule and attend a pre-submittal conference with the Director and other City staff. This voluntary, pre-submittal conference does not cause the FCC Shot Clock to begin and is intended to streamline the review process through collaborative, informal discussion that includes, without limitation, the appropriate project classification and review process; any latent issues in connection with the proposed project and/or project site, including compliance with generally applicable rules for public health and safety; potential concealment issues or concerns (if applicable); coordination with other City departments implicated by the proposed project; and application completeness issues. Pre-submittal conferences are especially encouraged when an applicant seeks to submit one or more batched applications so that the Director may advise the applicant about any staffing, scheduling or unusual circumstances or issues that may hinder the City's ability to meet the presumptively reasonable timeframes under the FCC Shot Clock. To mitigate unnecessary delays due to application incompleteness, applicants are encouraged (but not required) to bring any draft applications, plans, maps or other materials so that City staff may provide informal feedback and guidance about whether such applications or other materials may be incomplete or unacceptable in their then-current form. The Director will use reasonable efforts to provide the applicant with an appointment within approximately five working days after receiving a written request and any applicable fee or deposit to reimburse the City for its reasonable costs to provide the staff and/or consulting time and services rendered in the pre-submittal conference.
- (2) **Community Meeting.** The City also strongly encourages, but does not require, applicants to schedule, notice, arrange, and attend a pre-submittal community meeting with all interested members of the public. This voluntary, pre-submittal public meeting does not cause the FCC Shot Clock to begin and is intended to give applicants the opportunity to hear from members of the public regarding proposed deployment. Applicants are encouraged (but not required) to bring any draft applications, plans, maps, presentations or other materials to facilitate the public's understanding of the

applicant's proposal. The City seeks to encourage dialogue that may allow applicants to address areas of concern and may lessen the likelihood of appeals of the Director's decision to the City Council by any interested person or entity.

- (c) **Submittal Appointments.** All applications must be submitted in person to the City at a pre-scheduled appointment with the Director. Prospective applicants may generally submit one application per appointment, or up to five individual applications per appointment as a batch. Potential applicants may schedule successive appointments for multiple applications whenever feasible and not prejudicial to other applicants for any other development project as determined by the Director. The Director shall use reasonable efforts to offer an appointment within five working days after the Director receives a written request from a potential applicant. Any purported application received without an appointment, whether delivered in-person, by mail or through any other means, will not be considered duly filed, whether the City retains, returns or destroys the materials received.
- (d) **On-Site Inspection.** A physical inspection by City staff or the City's designee may be required for any application that involves: (i) a new facility on a new or replacement structure; (ii) any modification to an existing facility if no physical inspection has occurred in the last 12-month period; (iii) any request for an exception pursuant to Section 13 of this Policy. This paragraph does not limit the City's ability to conduct inspections at the Director's discretion.
- (e) **Incomplete Applications Deemed Withdrawn.** Any application governed under this Policy shall be automatically deemed withdrawn by the applicant when the applicant fails to submit a substantive response to the Director within 60 calendar days after the Director deems the application incomplete by written notice. As used in this Subsection (e), a "substantive response" must include, at a minimum, the complete materials identified as incomplete in the written incomplete notice.
- (f) **Additional Administrative Requirements and Regulations.** The City Council authorizes the Director to develop, publish and from time to time update or amend permit application requirements, forms, checklists, guidelines, informational handouts and other related materials that the Director finds necessary, appropriate or useful for processing any application governed under this policy so long as such updates or amendments do not diminish any requirement provided in this Policy. The City Council further authorizes the Director to establish other reasonable rules and regulations for duly filed applications, which may include without limitation regular hours for appointments and/or submittals without appointments, as the Director deems necessary or appropriate to organize, document and manage the application intake process. All such requirements, materials, rules and regulations must be in written form and publicly stated to provide all interested parties with prior notice.
- (g) **Fire Department Review.** After submittal by the applicant, the Director shall transmit the entire application packet to the Fire Prevention Division. The Fire Chief shall review the application for compliance with objective health and safety standards related to fire hazards, including but not limited to all applicable provisions in Title 10 of the Encinitas Municipal Code. The Fire Chief shall inform the Director in writing of its conclusions and any recommended conditions for public health and safety.
- (h) **Peer and Independent Consultant Review.** The City Council authorizes the Director to, in the Director's discretion, select and retain an independent consultant with specialized

training, experience and/or expertise in telecommunications issues satisfactory to the Director in connection any permit application. The Director may request an independent consultant review on any issue that involves specialized or expert knowledge in connection with wireless facilities deployment or permit applications for wireless facilities, which include without limitation: (a) permit application completeness and/or accuracy, including performing a drive test or other form of reception testing to determine whether the proposed facility is necessary to achieve the applicant's objectives as may be required in order to determine the necessity of an exception pursuant to Section 13; (b) pre-construction planned compliance with applicable regulations for human exposure to RF emissions; (c) post-construction actual compliance with applicable regulations for human exposure to RF emissions; (d) whether and to what extent a proposed project will comply with applicable laws; (e) the applicability, reliability and/or sufficiency of any information, analyses or methodologies used by the applicant to reach any conclusions about any issue with the City's discretion to review; and (f) any other issue identified by the Director that requires expert or specialized knowledge-, including without limitation any issues related to an exception requested by the applicant pursuant to Section 13 of this Policy. Until such time as the City hires staff possessing specialized expertise described in this paragraph, the City generally may be required to hire an independent consultant in connection with any application. The Director may request that the independent consultant prepare written reports, testify at public meetings, hearings and/or appeals and attend meetings with City staff and/or the applicant. Subject to applicable law, in the event that the Director elects to retain an independent consultant in connection with any permit application, the applicant shall be responsible for the reasonable costs in connection with the services provided, which may include without limitation any costs incurred by the independent consultant to attend and participate in any meetings or hearings. Before the independent consultant may perform any services, the applicant shall tender to the City a deposit in an amount equal to the estimated cost for the services to be provided, as determined by the Director until the City adopts the initial required deposit by fee schedule. The Director may request additional deposits as reasonably necessary to ensure sufficient funds are available to cover the reasonable costs in connection with the independent consultant's services. In the event that the deposit exceeds the total costs for consultant's services, the Director shall promptly return any unused funds to the applicant after the wireless facility has been installed and passes a final inspection by the Director or his or her designee. In the event that the reasonable costs for the independent consultant's services exceed the deposit, the Director shall invoice the applicant for the balance. The City shall not issue any construction or encroachment permit to any applicant with any unpaid deposit requests or invoices. In addition, the Fire Chief (or his or her designee) has the explicit authority to select and retain an independent consultant with expertise and/or specialized training in fire safety and fire hazard mitigation and prevention satisfactory to the Fire Chief in connection with any permit application. The Fire Chief may request independent consultant review on any matter committed to Fire Department review or approval. Subject to applicable law, in the event that the Fire Chief elects to retain an independent consultant in connection with any permit application, the applicant shall be responsible for the reasonable costs in connection with the services provided, which may include without limitation any costs incurred by the independent consultant to attend and participate in any meetings or hearings. The same procedures for fee deposits, cost reimbursements and refunds to the applicant as described above shall be applicable to independent consultant review required by the Fire Chief.

- (i) **Batched Applications.** Applicants may submit up to five individual applications for a small wireless facility permit in a batch; provided, however, that small wireless facilities in a batch must be proposed with substantially the same equipment in the same configuration

on the same support structure type. Each application in a batch must meet all the requirements for a complete application, which includes without limitation the application fee for each application in the batch. If any application in a batch is incomplete, the Director, in the Director's discretion, shall determine whether the entire batch shall be deemed incomplete. If any application is withdrawn or deemed withdrawn from a batch, the Director shall determine whether the entire batch shall be deemed withdrawn. If any application in a batch fails to meet the required findings for approval, the Director shall Determine whether the entire batch shall be denied.

- (j) **City Staff Time for Review.** City staff, including the Fire Prevention Division, shall take the appropriate amount of time necessary to complete review of an application. If it is anticipated that additional time is required, staff should document the unusual circumstances justifying additional time and the Director should contact the applicant to attempt to enter into a tolling agreement to avoid legal uncertainty.

## **SECTION 7. PUBLIC NOTICES**

- (a) **Application Submittal Notice.** Within 3 business days after an application is received and prior to any approval, conditional approval or denial, the City shall mail public notice to all persons entitled to notice. The notice must contain: (1) a general project description; (2) the applicant's identification and contact information as provided on the application submitted to the City; (3) contact information for the Director for interested parties to submit comments; (4) a statement that the Director will act on the application without a public hearing but that any interested person or entity may appeal the Director's decision directly to the City Council; (5) if the application is for a small wireless facility, a general statement that the FCC requires the City to take final action on such applications within 60 days for collocations and 90 days for facilities on new support structures; and (6) a statement that any person that wishes to seek a reasonable accommodation under the Americans with Disabilities Act, Fair Housing Act Amendments of 1988, or other applicable state or federal law may do so in accordance with the City's standard disability accommodation process and such requests shall be kept confidential per California Code of Regulations, Title 2, Section 12176(b). Within 3 business days of the City's mailing of the above public notice, the applicant, with the approval from the proposed site owner, shall provide proof to the City that the applicant posted a copy of the above public notice on the proposed site.
- (b) **Public Information.** Individuals desiring to receive e-mail notifications regarding pending and completed applications may do so by email request to the Development Services Department. Information regarding the location and status of proposed and active wireless facilities, and applicant contact information and applicable City code enforcement personnel, shall also be posted the City's website.
- (c) **Application Decision Notice.** Within five calendar days after the Director acts on a ROW administrative design review permit application, the Director shall provide written notice to the applicant and all persons entitled to notice. If the Director denies an application (with or without prejudice) for a small wireless facility, the written notice must also contain the reasons for the denial.

## SECTION 8. DECISIONS

- (a) **Initial Administrative Decision.** Not more than 29 shot clock days after the application has been deemed complete, the Director shall approve, conditionally approve or deny a complete and duly filed ROW administrative design review permit application without a public hearing. Failure of the Director to comply with the timetable in this paragraph shall not affect the Director's authority to approve or deny any permit.
- (b) **Required Findings for Approval.** The Director may approve or conditionally approve a complete and duly filed application for a ROW administrative design review permit when the Director finds:
  - (1) the proposed project complies with all applicable design and location standards in this Policy and all applicable laws;
  - (2) the proposed project would be in the most preferred location pursuant to Section 10(b) within 500 feet from the proposed site in any direction or the applicant has demonstrated with clear and convincing evidence in the written record that any more-preferred location(s) within 500 feet would be technically infeasible;
  - (3) the proposed project would not be located on a prohibited support structure identified in this Policy;
  - (4) the proposed project would be on the most preferred support structure within 500 feet from the proposed site in any direction or the applicant has demonstrated with clear and convincing evidence in the written record that any more-preferred support structure(s) within 500 feet would be technically infeasible;
  - (5) if the proposed project involves a wireless facility, the proposed project fits within the definition for a "small wireless facility" as defined by the FCC;
  - (6) if the proposed project involves a wireless facility, the applicant has demonstrated that the proposed project will be in planned compliance with all applicable FCC regulations and guidelines for human exposure to RF emissions;
  - (7) the proposed project has been reviewed and approved or conditionally approved by the Fire Chief in accordance with Section 6(g) of this Policy;
  - (8) all public notices required for the application have been given; and
  - (9) the applicant provided a complete application or the application was deemed complete by operation of law.
- (c) **Conditional Approvals; Denials Without Prejudice.** Subject to any applicable federal or California laws, nothing in this Policy is intended to limit the Director's ability to conditionally approve or deny without prejudice any ROW administrative design review permit application as may be necessary or appropriate to ensure compliance with this Policy.
- (d) **Appeals.** Any interested person or entity may appeal the decision by the Director to the City Council; provided, however, that appeals from an approval shall not be permitted

when based solely on the environmental effects from RF emissions that are compliant with applicable FCC regulations and guidelines. An appeal notice must be filed within seven calendar days after the date on the Director's decision notice. The notice must contain a short and plain statement about the basis for the appeal, which may be supplemented after the notice period has expired but before the appeal hearing. The City Council shall hear appeals *de novo* and issue the applicant and any person entitled to notice a written decision within five calendar days after the appeal hearing. If the City Council denies the application on appeal (whether by affirmation or reversal), the written notice shall contain the reasons for the decision.

## SECTION 9. CONDITIONS OF APPROVAL

- (a) **Standard Conditions.** Except as may be authorized in subsection (b), all ROW administrative design review permits issued under this Policy shall be automatically subject to the conditions in this subsection (a).
- (1) **Permit Term.** This permit will automatically expire 10 years and one day from its issuance unless California Government Code § 65964(b) authorizes the City to establish a shorter term for public safety reasons. Any other permits or approvals issued in connection with any collocation, modification or other change to this wireless facility, which includes without limitation any permits or other approvals deemed-granted or deemed-approved under federal or state law, will not extend this term limit unless expressly provided otherwise in such permit or approval or required under federal or state law. The Director may establish a shorter permit term if (i) the Fire Chief concludes that the proposed wireless facility presents a potential fire hazard and (ii) the potential fire hazard cannot be mitigated by changes to the facility or other conditions.
- (2) **Permit Renewal.** The permittee may apply for permit renewal not more than one year before this ROW administrative design review permit expires. The permittee must demonstrate that the subject small wireless facility or other infrastructure deployment complies with all the conditions of approval associated with this ROW administrative design review permit and all applicable provisions in the Encinitas Municipal Code and this Policy that exists at the time the decision to renew or not renew is rendered. The Director may modify or amend the conditions on a case-by-case basis as may be necessary or appropriate to ensure compliance with the Encinitas Municipal Code, this Policy or other applicable law. Upon renewal, this ROW administrative design review permit will automatically expire 10 years and one day from its issuance unless issued for a shorter term pursuant to Section 9(a)(1).
- (3) **Post-Installation Certification.** Within 60 calendar days after the permittee commences full, unattended operations of a small wireless facility or other infrastructure deployment approved or deemed-approved, the permittee shall provide the Director with documentation reasonably acceptable to the Director that the small wireless facility or other infrastructure deployment has been installed and/or constructed in strict compliance with the approved construction drawings and photo simulations. Such documentation shall include without limitation as-built drawings, GIS data and site photographs and may be reviewed for compliance by an independent consultant retained by the City pursuant to Section 6(h).

- (4) **Build-Out Period.** This ROW administrative design review permit will automatically expire 12 months from the approval date (the "build-out period") unless the permittee obtains all other permits and approvals required to install, construct and/or operate the approved small wireless facility or other infrastructure deployment, which includes without limitation any permits or approvals required by any federal, state or local public agencies with jurisdiction over the subject property, support structure or the small wireless facility or other infrastructure deployment and its use. The permittee may request in writing, and the City may grant in writing, one six-month extension if the permittee submits substantial and reliable written evidence demonstrating justifiable cause for a six-month extension. If the build-out period and any extension finally expire, the permit shall be automatically void but the permittee may resubmit a complete application, including all application fees, for the same or substantially similar project.
- (5) **Site Maintenance.** The permittee shall keep the site, which includes without limitation any and all improvements, equipment, structures, access routes, fences and landscape features, in a neat, clean and safe condition in accordance with the approved construction drawings and all conditions in this ROW administrative design review permit. The permittee shall keep the site area free from all litter and debris at all times. The permittee, at no cost to the City, shall remove and remediate any graffiti or other vandalism at the site within 48 hours after the permittee receives notice or otherwise becomes aware that such graffiti or other vandalism occurred. All portions of the facility where the RF emission levels are in compliance with FCC "occupational/controlled exposure" levels but exceeded FCC "general population/uncontrolled exposure" levels must be marked with the appropriate signage.
- (6) **Compliance with Laws.** The permittee shall maintain compliance at all times with all federal, state and local statutes, regulations, orders or other rules that carry the force of law ("laws") applicable to the permittee, the subject property, the small wireless facility or other infrastructure deployment or any use or activities in connection with the use authorized in this ROW administrative design review permit, which includes without limitation any laws applicable to human exposure to RF emissions and any standards, specifications or other requirements identified by the Director (such as, without limitation, those requirements affixed to an encroachment permit). If the Director at any time finds good cause to believe that the facility is not in compliance with any laws applicable to human exposure to RF emissions, the Director may (a) require the permittee to submit a written report certified by a qualified radio frequency engineer familiar with the facility that certifies that the facility is in compliance with all such laws; or (b) require that an RF field test be conducted by an independent consultant (see Section 6(h)) without notice to the permittee, the cost of which shall be borne by the permittee. The Director shall require an onsite compliance test in situations where applicable federal laws would authorize the City to require an such testing at the permittee's expense. All on-site tests for compliance with the FCC's RF exposure regulations shall be conducted: (1) by an independent third party selected by the Director; (2) at random times, except when the test is conducted prior to unattended operation in which case the test will be at a time when the facility is operated at maximum power; and (3) using state-of-the-art methods and instruments appropriate for the technology involved. The Director may order the facility to be immediately powered down if, based on objective evidence, the Director finds that the facility is in fact not in compliance with any laws applicable including laws applicable to RF

emissions until such time that the permittee demonstrates actual compliance with such laws. The permittee expressly acknowledges and agrees that this obligation is intended to be broadly construed and that no other specific requirements in these conditions are intended to reduce, relieve or otherwise lessen the permittee's obligations to maintain compliance with all laws. No failure or omission by the City to timely notice, prompt or enforce compliance with any applicable provision in the Encinitas Municipal Code, this Policy, any permit, any permit condition or any applicable law or regulation, shall be deemed to relieve, waive or lessen the permittee's obligation to comply in all respects with all applicable provisions in the Encinitas Municipal Code, this Policy, any permit, any permit condition or any applicable law or regulation.

- (A) **Copies of CPUC Notification Letters.** Within 15 business days of issuance of permit, permittee shall serve of copies of California Public Utility Commission notification letters to City Clerk, Director and City Manager, as required by CPUC General Order No. 159A § (IV)(C)(2) unless otherwise exempted pursuant to CPUC General Order No. 159A § (IV)(D).
- (7) **Adverse Impacts on Other Properties.** The permittee shall use all reasonable efforts to avoid any and all unreasonable, undue or unnecessary adverse impacts on nearby properties that may arise from the permittee's or its authorized personnel's construction, installation, operation, modification, maintenance, repair, removal and/or other activities on or about the site. The permittee shall not perform or cause others to perform any construction, installation, operation, modification, maintenance, repair, removal or other work that involves heavy equipment or machines except during normal construction work hours authorized by the Encinitas Municipal Code. The restricted work hours in this condition will not prohibit any work required to prevent an actual, immediate harm to property or persons, or any work during an emergency declared by the City or other state or federal government agency or official with authority to declare an emergency within the City. The Director may issue a stop work order for any activities that violates this condition in whole or in part. If the Director finds good cause to believe that ambient noise from a facility violates applicable provisions in the Encinitas Municipal Code, the Director may, in addition to any other actions or remedies authorized by the permit, the Encinitas Municipal Code or other applicable laws, require the permittee to commission a noise study by a qualified professional to evaluate the facility's compliance. The permittee shall, at its sole cost and expense, repair and restore any and all damages to public and private properties that result from any activities performed in connection with the installation or maintenance of a small wireless facility in the public right-of-way. The permittee shall restore such areas, structures and systems to the condition in which they existed prior to the installation or maintenance that necessitated the repairs. In the event the permittee fails to complete such repair within the number of days stated on a written notice by the City Manager or designee, the City Manager or designee shall cause such repair to be completed at permittee's sole cost and expense.
- (8) **Permittee Cooperation.** Permittee agrees to promptly cooperate with the City in assisting the City to achieve its accommodation obligations under the Americans with Disabilities Act, the Fair Housing Act Amendments of 1988 and other applicable laws.

- (9) **Inspections; Emergencies.** The permittee expressly acknowledges and agrees that the City's officers, officials, staff, agents, contractors or other designees may enter onto the site and inspect the improvements and equipment upon reasonable prior notice to the permittee. Notwithstanding the prior sentence, the City's officers, officials, staff, agents, contractors or other designees may, but will not be obligated to, enter onto the site area without prior notice to support, repair, disable or remove any improvements or equipment in emergencies or when such improvements or equipment threatens actual, imminent harm to property or persons. The permittee, if present, may observe the City's officers, officials, staff or other designees while any such inspection or emergency access occurs.
- (10) **Permittee's Contact Information.** Prior to final inspection and at all times relevant to this permit, the permittee shall keep on file with the Director basic contact and site information on a form to be supplied by the City. This information shall include, but is not limited to, the following: (a) the name, physical address, notice address (if different), direct telephone number and email address for (i) the permittee and, if different from the permittee, the (ii) site operator, (ii) equipment owner, (iii) site manager and (iv) agent for service of process; (b) the regulatory authorizations held by the permittee and, to the extent applicable, site operator, equipment owner and site manager as may be necessary for the facility's continued operation; (c) the facility's site identification number and/or name used by the permittee and, to the extent applicable, site operator, equipment owner and site manager; and (d) a toll-free telephone number to the facility's network operations center where a live person with power-down control over the facility is available 24 hours-per-day, seven days-per-week. Within 10 business days after a written request by the City, the permittee shall furnish the City with an updated form that includes all the most-current information described in this condition.
- (11) **Indemnification.** The permittee, each owner or operator of an antenna on the facility, and, if applicable, the property owner upon which the small wireless facility or other infrastructure deployment is installed shall defend, indemnify and hold harmless the City, City Council and the City's boards, commissions, agents, officers, officials, employees and volunteers (collectively, the "indemnitees") from any and all (i) damages, liabilities, injuries, losses, costs and expenses and from any and all claims (including claims on the basis of RF emissions), demands, law suits, writs and other actions or proceedings ("claims") brought against the indemnitees to challenge, attack, seek to modify, set aside, void or annul the City's approval of this ROW administrative design review permit, and (ii) other claims of any kind or form, whether for personal injury, death or property damage, that arise from or in connection with the permittee's or its agents', directors', officers', employees', contractors', subcontractors', licensees' or customers' acts or omissions in connection with this ROW administrative design review permit or the small wireless facility claims (including claims on the basis of RF emissions) or other infrastructure deployment. In the event the City becomes aware of any claims, the City will use best efforts to promptly notify the permittee and the private property owner (if applicable) and shall reasonably cooperate in the defense. The permittee expressly acknowledges and agrees that the City shall have the right to approve, which approval shall not be unreasonably withheld, the legal counsel providing the City's defense, and the property owner and/or permittee (as applicable) shall promptly reimburse the City for any costs and expenses directly and necessarily incurred by the City in the course of the defense. The permittee expressly acknowledges and agrees that the permittee's indemnification

obligations under this condition are a material consideration that motivates the City to approve this ROW administrative design review permit, and that such indemnification obligations will survive the expiration, revocation or other termination of this ROW administrative design review permit.

- (12) **Performance Bond.** Before the City issues any permits required to commence construction in connection with this permit, the permittee shall post a performance bond from a surety and in a form acceptable to the Director in an amount reasonably necessary to cover the cost to remove the improvements and restore all affected areas based on a written estimate from a qualified contractor with experience in wireless facilities or other infrastructure removal. The written estimate must include the cost to remove all equipment and other improvements, which includes without limitation all antennas, radios, batteries, generators, utilities, cabinets, mounts, brackets, hardware, cables, wires, conduits, structures, shelters, towers, poles, footings and foundations, whether above ground or below ground, constructed or installed in connection with the wireless facility, plus the cost to completely restore any areas affected by the removal work to a standard compliant with applicable laws. In establishing or adjusting the bond amount required under this condition, the Director shall take into consideration any information provided by the permittee regarding the cost to remove the small wireless facility or other infrastructure deployment to a standard compliant with applicable laws. The performance bond shall expressly survive the duration of the permit term to the extent required to effectuate a complete removal of the subject wireless facility or other infrastructure deployment in accordance with this condition.
- (13) **Permit Revocation.** Any permit granted under this Policy may be revoked in accordance with the provisions and procedures in this condition. The Director may initiate revocation proceedings when the Director has information that the permittee made material changes to any part of the facility without the City's prior written authorization or that the facility may not be in compliance with all applicable laws, which includes without limitation, any permit in connection with the facility and any associated conditions with such permit(s). Before any public hearing to revoke a permit granted under this Policy, the Director must issue a written notice to the permittee that specifies (i) the facility; (ii) the violation(s) to be corrected; (iii) the timeframe in which the permittee must correct such violation(s); and (iv) that, in addition to all other rights and remedies the City may pursue, the City may initiate revocation proceedings for failure to correct such violation(s). A permit granted under this Policy may be revoked only by the City Council after a duly notice public hearing. The Director shall provide at least 10 days' prior written notice of such public hearing to residents and property owners within 500 feet from the facility. The City Council may revoke a permit when it finds substantial evidence in the written record to show that the facility is not in compliance with any applicable laws, which includes without limitation, any permit in connection with the facility and any associated conditions with such permit(s). Any decision by the City Council to revoke or not revoke a permit shall be final and not subject to any further appeals. Within five business days after the City Council adopts a resolution to revoke a permit, the Director shall provide the permittee with a written notice that specifies the revocation and the reasons for such revocation.
- (14) **Record Retention.** Throughout the permit term, the permittee must maintain a complete and accurate copy of the written administrative record, which includes

without limitation the ROW administrative design review permit application, ROW administrative design review permit, the approved plans and photo simulations incorporated into this approval, all conditions associated with this approval, any ministerial permits or approvals issued in connection with this approval and any records, memoranda, documents, papers and other correspondence entered into the public record in connection with the ROW administrative design review permit (collectively, "records"). If the permittee does not maintain such records as required in this condition, any ambiguities or uncertainties that would be resolved by inspecting the missing records will be construed against the permittee. The permittee shall protect all records from damage from fires, floods and other hazards that may cause deterioration. The permittee may keep records in an electronic format; provided, however, that hard copies or electronic records kept in the City's regular files will control over any conflicts between such City-controlled copies or records and the permittee's electronic copies, and complete originals will control over all other copies in any form. The requirements in this condition shall not be construed to create any obligation to create or prepare any records not otherwise required to be created or prepared by other applicable laws. Compliance with the requirements in this condition shall not excuse the permittee from any other similar record-retention obligations under applicable law.

- (15) **Abandoned Facilities.** The small wireless facility or other infrastructure deployment authorized under this ROW administrative design review permit shall be deemed abandoned if not operated for any continuous six-month period. Within 90 days after a small wireless facility or other infrastructure deployment is abandoned or deemed abandoned, the permittee and/or property owner shall completely remove the small wireless facility or other infrastructure deployment and all related improvements and shall restore all affected areas to a condition compliant with all applicable laws, which includes without limitation the Encinitas Municipal Code. In the event that neither the permittee nor the property owner complies with the removal and restoration obligations under this condition within said 90-day period, the City shall have the right (but not the obligation) to perform such removal and restoration with or without notice, and the permittee and property owner shall be jointly and severally liable for all costs and expenses incurred by the City in connection with such removal and/or restoration activities. A permittee shall respond within 15 days in writing to any City inquiry regarding the continued operational status of any facility. Additionally, on or before January 30<sup>th</sup> of each calendar year, the permittee shall provide the City with a list of all currently operational facilities within the City.
- (16) **Landscaping.** The permittee shall abide by the landscape plan submitted pursuant to Section 6(a)(14) and shall replace and be responsible for the maintenance of any landscape features damaged or displaced by the construction, installation, operation, maintenance or other work performed by the permittee or at the permittee's direction on or about the site in accordance with Section 11(e).
- (17) **Cost Reimbursement.** The permittee acknowledges and agrees that (i) the permittee's request for authorization to construct, install and/or operate the wireless facility will cause the City to incur costs and expenses; (ii) the permittee shall be responsible to reimburse the City for all costs incurred in connection with the permit, which includes without limitation costs related to application review, permit issuance, site inspection and any other costs reasonably related to or

caused by the request for authorization to construct, install and/or operate the wireless facility or other infrastructure deployment; (iii) any application fees required for the application may not cover all such reimbursable costs and that the permittee shall have the obligation to reimburse the City for all such costs 10 days after a written demand for reimbursement and reasonable documentation to support such costs; and (iv) the City shall have the right to withhold any permits or other approvals in connection with the wireless facility until and unless any outstanding costs have been reimbursed to the City by the permittee.

- (18) **Future Undergrounding Programs.** Notwithstanding any term remaining on any ROW administrative design review permit, if other utilities or communications providers in the public rights-of-way underground their facilities in the segment of the public rights-of-way where the permittee's small wireless facility or other infrastructure deployment is located, the permittee must also underground its equipment, except the antennas and any approved electric meter, at approximately the same time. Accessory equipment such as radios and computers that require an environmentally controlled underground vault to function shall not be exempt from this condition. Small wireless facilities and other infrastructure deployments installed on wood utility poles that will be removed pursuant to the undergrounding program may be reinstalled on a streetlight that complies with the City's standards and specifications. Such undergrounding shall occur at the permittee's sole cost and expense except as may be reimbursed through tariffs approved by the state public utilities commission for undergrounding costs.
- (19) **Electric Meter Upgrades.** If the commercial electric utility provider adopts or changes its rules obviating the need for a separate or ground-mounted electric meter and enclosure, the permittee on its own initiative and at its sole cost and expense shall remove the separate or ground-mounted electric meter and enclosure. Prior to removing the electric meter, the permittee shall apply for any encroachment and/or other ministerial permit(s) required to perform the removal. Upon removal, the permittee shall restore the affected area to its original condition that existed prior to installation of the equipment.
- (20) **Rearrangement and Relocation.** The permittee acknowledges that the City, in its sole discretion and at any time, may: (A) change any street grade, width or location; (B) add, remove or otherwise change any improvements in, on, under or along any street owned by the City or any other public agency, which includes without limitation any sewers, storm drains, conduits, pipes, vaults, boxes, cabinets, poles and utility systems for gas, water, electric or telecommunications; and/or (C) perform any other work deemed necessary, useful or desirable by the City (collectively, "City work"). The City reserves the rights to do any and all City work without any admission on its part that the City would not have such rights without the express reservation in this ROW administrative design review permit. If the Director determines that any City work will require the permittee's small wireless facility located in the public rights-of-way to be rearranged and/or relocated, the permittee shall, at its sole cost and expense, do or cause to be done all things necessary to accomplish such rearrangement and/or relocation. If the permittee fails or refuses to either permanently or temporarily rearrange and/or relocate the permittee's small wireless facility or other infrastructure deployment within a reasonable time after the Director's notice, the City may (but will not be obligated to) cause the rearrangement or relocation to be performed at the permittee's sole cost and expense. The City may exercise its rights to rearrange or relocate the

permittee's small wireless facility or other infrastructure deployment without prior notice to permittee when the Director determines that City work is immediately necessary to protect public health or safety. The permittee shall reimburse the City for all costs and expenses in connection with such work within 10 days after a written demand for reimbursement and reasonable documentation to support such costs. Except as may be expressly permitted otherwise, nothing in this permit will be construed to require the City or authorize the permittee to change any street grade, width or location, or add, remove or otherwise change any improvements owned by the City or any other public agency located in, on, under or along the site area or any portion of the public rights-of-way, which includes without limitation any sewers, storm drains, conduits, pipes, vaults, boxes, cabinets, poles and utility systems for gas, water, electric or telecommunications, for the permittee's or any third party's convenience or necessity.

- (21) **Truthful and Accurate Statements.** The permittee acknowledges that the City's approval relies on the written and/or oral statements by permittee and/or persons authorized to act on permittee's behalf. In any matter before the City in connection with the ROW administrative design review permit or the small wireless facility or other infrastructure approved under the ROW administrative design review permit, neither the permittee nor any person authorized to act on permittee's behalf shall, in any written or oral statement, intentionally provide material factual information that is incorrect or misleading or intentionally omit any material information necessary to prevent any material factual statement from being incorrect or misleading.
- (22) **Affirmation of Radio Frequency Standards Compliance.** On or before January 30<sup>th</sup> in each calendar year, the permittee and each operator or owner of an antenna on the site acknowledges and agrees that the permittee shall submit: (1) an affirmation, under penalty of perjury, that the installation is and will remain FCC compliant, because it will not cause members of the general public to be exposed to RF levels that exceed the maximum permission exposure levels deemed safe by the FCC; (2) a copy of the fully completed FCC form "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance: Appendix A titled "Optional Checklist for Determination of Whether a Facility is Categorically Excluded" for each frequency band of RF emissions to be transmitted from the proposed facility upon the approval of the application. All planned radio frequency emissions on all frequency bands must be shown on the Appendix A form(s) attached to the application. All radio frequency emissions are to be entered on each Appendix A form only in wattage units of "effective radiated power." Any facility approved pursuant to this Policy shall automatically become subject to the most stringent RF emission standards that may become allowable by law.
- (23) **Safety Hazard Protocols.** If the Fire Chief (or his or her designee) or Board of Chiefs of the North County Dispatch Joint Powers Authority finds good cause to believe that the facility (including, without limitation, its accessory equipment, antenna and/or base station) presents a fire risk, electrical hazard or other immediate threat to public health and safety in violation of any applicable law, such officials may order the facility to be shut down and powered off until such time as the fire risk or electrical hazard has been mitigated. Any mitigations required shall be at the permittee's sole cost and expense.

(A) Continued Monitoring. The permittee shall certify in writing continued compliance with the safety standards of this policy on or before January 30<sup>th</sup> of each calendar year. The Fire Chief will continue to monitor the safety of wireless facilities in the City and publish a yearly review of fire safety considerations regarding potential risks posed by electrical components of new technologies, the presence of numerous small cell wireless facilities in the ROW and any fire events or near-miss events related to wireless facilities.

(B) Oversight Authority. The Fire Chief, in his or her discretion, may issue written fire safety performance directives that shall apply to all existing permits within the scope of such directives and shall be considered as though incorporated into such permits. All permittees shall be required to comply with such directives at the permittee's sole cost and expense.

(C) Investigations. (i) The Fire Chief shall receive and investigate any credible fire safety complaint made by a resident of the City regarding a wireless facility in the City. Cost of such investigation shall be borne by the permittee. Permittees shall also inform the Fire Chief in writing within one business day of any fire or near-ignition event at any facility or replacement of any facility component in connection with any malfunction pertaining to excess heat, sparking or discharged current. (ii) The Fire Chief shall further investigate any fire in or around the vicinity of a small cell wireless facility. If the conclusion of the investigation is that any facility component is at fault, the Fire Chief shall promptly notify the Encinitas City Council of his/her findings, and the facility at issue shall be immediately powered down until such time as the permittee provides assurances or undertakes precautions satisfactory to the Fire Chief that such event or similar event will not reoccur. In the event that no such assurance is received, and the Fire Chief has good cause to believe that such failure to comply constitutes a threat to health or safety, the Fire Chief may recommend permit revocation to the Director pursuant to the procedures in Section 9(a)(13) and removal pursuant to Section 9(a)(15).

(24) **Insurance.** Permittee, and each owner or operator of an antenna on the facility, shall obtain, and at all times relevant to this permit maintain, insurance policies, issued by an insured authorized to do business in the State of California and reasonably acceptable to the City Risk Manager, at least as broad as follows:

(A) **Commercial General Liability.** Insurance Services Office Form CG 00 01 covering Commercial General Liability ("CGL") on an "occurrence" basis, with limits not less than \$2,000,000 per occurrence per wireless carrier or \$4,000,000 per wireless carrier in the aggregate. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. CGL insurance must include coverage for the following: Bodily Injury and Property Damage; Personal Injury/Advertising Injury; Premises/Operations Liability; Products/Completed Operations Liability; Aggregate Limits that Apply per Project; Explosion, Collapse and Underground ("UCX") exclusion deleted; Contractual Liability with respect to the permit; Broad Form Property Damage; and Independent Consultants Coverage. The policy shall contain no endorsements or provisions limiting coverage for (i) contractual liability; (ii) cross liability exclusion for claims or suits by one insured against another; (iii) products/completed operations

liability; (iv) bodily injury or damage from RF exposure at levels exceeding the FCC limits; or (v) contain any other exclusion contrary to the conditions in this permit.

- (B) **Automotive Insurance.** Insurance Services Office Form Number CA 00 01 covering, Code 1 (any auto), or if permittee has no owned autos, Code 8 (hired) and 9 (non-owned), with limit no less than \$1,000,000 per accident for bodily injury and property damage.
- (C) **Workers' Compensation.** The permittee shall certify that it is aware of the provisions of California Labor Code § 3700, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and further certifies that the permittee will comply with such provisions before commencing work under this permit. To the extent the permittee has employees at any time during the term of this permit, at all times during the performance of the work under this permit the permittee shall maintain insurance as required by the State of California, with Statutory Limits, and Employer's Liability Insurance with limit of no less than \$1,000,000 per accident for bodily injury or disease.
- (D) **Errors and Omissions Policy.** The permittee shall maintain Professional Liability (Errors and Omissions) Insurance appropriate to the permittee's profession, with limit no less than \$1,000,000 per occurrence or claim. This insurance shall be endorsed to include contractual liability applicable to this permit and shall be written on a policy form coverage specifically designed to protect against acts, errors or omissions of the permittee. "Covered Professional Services" as designed in the policy must specifically include work performed under this permit.
- (E) **Environmental Pollution Liability Insurance.** The permittee shall procure and maintain at its expense or cause its contractor or subcontractor to procure and maintain throughout the term of this permit, Contractors Pollution Liability Insurance including contractual liability coverage to cover liability and legal expenses arising out of cleanup, removal, storage, or handling of hazardous or toxic chemicals, materials, substances, or any other pollutants by the permittee or any subcontractor resulting from pollution conditions associated with the facility in an amount not less than \$1,000,000 each occurrence combined single limit for bodily injury and property damage.
- (F) **Umbrella Policy.** If an umbrella or excess liability insurance policy is used to satisfy the minimum requirements for CGL or Automobile Liability insurance coverage listed above, the umbrella or excess liability policies shall provide coverage at least as broad as specified for the underlying coverages and covering those insured in the underlying policies. Coverage shall be "pay on behalf," with defense costs payable in addition to policy limits. Permittee shall provide a "follow form" endorsement or schedule of underlying coverage satisfactory to the City indicating that such coverage is subject to the same terms and conditions as the underlying liability policy.

- (G) **Endorsements.** The relevant policy(ies) shall name the City, its elected/appointed officials, commission members, officers, representatives, agents, volunteers and employees as additional insureds. The permittee shall use its best efforts to provide thirty (30) days' prior notice to the City of to the cancellation or material modification of any applicable insurance policy.
- (H) **Verification of Coverage.** Permittee shall furnish the City with original certificates and amendatory endorsements or copies of the applicable policy language providing the insurance coverage required herein. All certificates and endorsements are to be received and approved by the City before any work commences. However, failure to obtain required documents prior to the work beginning shall not waive the Licensee's obligation to provide them. Permittee shall furnish updated certificates and endorsements to the City annually. The City reserves the right to require updated certificates and endorsements or complete, certified copies of all required insurance policies, including the endorsements required herein, at any time.
- (25) **Successors and Assigns.** The conditions, covenants, promises and terms contained in this permit will bind and inure to the benefit of the City and permittee and their respective successors and assigns.
- (26) **Severability of Conditions.** If any provision in these conditions or such provision's application to any person, entity or circumstances is or held by any court with competent jurisdiction to be invalid or unenforceable: (1) such provision or its application to such person, entity or circumstance will be deemed severed from this permit; (2) all other provisions in this permit or their application to any person, entity or circumstance will not be affected; and (3) all other provisions in this permit or their application to any person, entity or circumstance will be valid and enforceable to the fullest extent permitted by law.
- (27) **City's Standing Reserved.** The City's grant or grant by operation of law of a permit pursuant to this Policy does not waive, and shall not be construed to waive, any standing by the City to challenge any FCC rules that interpret the Telecommunications Act, the Spectrum Act or any permit issued pursuant to this Policy.
- (b) **Modified Conditions; Permits Conditional.** The City Council authorizes the Director to modify, add or remove conditions to any ROW administrative design review permit as the Director deems necessary or appropriate to: (1) protect and/or promote the public health, safety and welfare; (2) tailor the standard conditions in subsection (a) to the particular facts and circumstances associated with the deployment; and/or (3) memorialize any changes to the proposed deployment need for compliance with the Encinitas Municipal Code, this policy, generally applicable health and safety requirements and/or any other applicable laws. In the event of a change in any state or federal law affecting this Policy, including judicial decisions applicable to such laws, all permits issued pursuant to this Policy shall be reviewed and modified by the Director to maximally effectuate the objectives of this Policy as determined by the Director.

- (c) **Facilities Review following Change of Law.** But for restrictions imposed by state and/or federal law, which includes regulations promulgated by the FCC, the City would not approve any facility unless such facility was the least intrusive means to mitigate a significant gap in the provider's service. Following any change of laws as described in Section 9(b) that would restore the City's authority to enforce such restrictions, at permittees' sole cost and expense, the Director may direct the City's expert to identify any facilities that are not necessary to mitigate a gap in the permittee's service or are not the least intrusive means to mitigate such a gap. The Director shall adopt or reject, or adopt or reject with respect to specific facilities, the opinion of the expert within five days of such expert report having been submitted to the Director, which shall be made public on the applicable City website. If the director determined that a facility is not necessary to mitigate a gap and/or not the least intrusive means to do so, the Director shall notify the permittee in writing of the determination and commence revocation hearings and proceedings. The Director shall provide at least 10 days' prior written notice of such public hearing to residents and property owners within 500 feet from the facility. The City Council may revoke a permit when it finds substantial evidence in the written record to show that the facility is not necessary to fill a gap in coverage and/or not the least intrusive means to do so. Any decision by the City Council to revoke or not revoke a permit shall be final and not subject to any further appeals. Within five business days after the City Council adopts a resolution to revoke a permit, the Director shall provide the permittee with a written notice that specifies the revocation and the reasons for such revocation. Existing permittees subject to revocation and new applicants will be eligible to seek a new permit as conditional use permit (major) under Chapter 30.74 of the Municipal Code.

## **SECTION 10. LOCATION STANDARDS**

- (a) **Restricted Site Locations.** All of the following locations will be deemed "Restricted Site Locations" that require an exception pursuant to Section 13 of this Policy:
- (1) any location within a residential zone;
  - (2) any location within 500 feet from a residential dwelling unit;
  - (3) any location within 500 feet from a daycare facility or school;
  - (4) any location within a Very High Fire Hazard Severity Zone;
  - (5) any location within the Ecological Resource/Open Space/Park Zone;
  - (6) any location within 100 feet from the inland sand line or bluff line;
  - (7) any location within 250 feet from any federal, state or local historic landmark;
  - (8) any location with 100 feet from a Scenic Vista Point as designated in the Encinitas General Plan.
- (b) **Location Preferences.** To better assist applicants and decision makers understand and respond to the community's aesthetic preferences and values, this subsection sets out listed preferences for locations to be used in connection with small wireless facilities in an ordered hierarchy. Applications that involve lesser-preferred locations may be approved so long as the applicant demonstrates by clear and convincing evidence in the written

record that: (1) any more preferred locations or structures within 500 feet from the proposed site would be technically infeasible; and (2) if the proposed site or the most-preferred location within 500 feet from the proposed site is within a Restricted Site Location, the applicant qualifies for an exception pursuant to Section 13 of this Policy. The City requires small cells in the public rights-of-way to be installed in locations, ordered from most preferred to least preferred, as follows:

- (1) locations within industrial zones, commercial zones, business parks or office professional zones on or along prime arterials;
- (2) locations within industrial zones, commercial zones, business parks or office professional zones on or along major arterials;
- (3) locations within industrial zones, commercial zones, business parks or office professional zones on or along collector roads;
- (4) locations within industrial zones, commercial zones, business parks or office professional zones on or along local streets;
- (5) any location within 1,000 feet from an existing/proposed small wireless facility;
- (6) any location not less than 500 feet from any Restricted Site Location (as defined in Section 10(a) above);
- (7) locations within residential zones on or along prime arterials;
- (8) locations within residential zones on or along major arterials;
- (9) locations within residential zones on or along collector roads;
- (10) locations within residential zones on or along local streets.

To minimize visual clutter, the collocation of any facility within a location class identified in subsection (b) above is more preferred than non-collocation within that same class (without simultaneously being located in a lower priority class) so long as collection can be achieved within existing shrouding and without sacrificing achievement of the objectives in Section 11.

In the event that a proposed facility would be within 500 feet a residence, the technically feasible location furthest from all residences will be deemed to be the most preferred alternative. In the event that a proposed facility would be located within a Restricted Site Location (as defined in Subsection 10(a)), and the proposed facility qualifies for an exception pursuant to Section 13 of this Policy, the technically must be located in the feasible location of highest priority class while not simultaneously located in a lower priority class pursuant to this subsection (b).

- (c) **Encroachments Over Private Property.** No small cell antennas, accessory equipment or other improvements may encroach onto or over any private or other property outside the public rights-of-way without the property owner's express written consent.

- (d) **No Interference with Other Uses.** Small cells and any associated antennas, accessory equipment or improvements shall not be located in any place or manner that would physically interfere with or impede access to any: (1) worker access to any above-ground or underground infrastructure for traffic control, streetlight or public transportation, including without limitation any curb control sign, parking meter, vehicular traffic sign or signal, pedestrian traffic sign or signal, barricade reflectors; (2) access to any public transportation vehicles, shelters, street furniture or other improvements at any public transportation stop; (3) worker access to above-ground or underground infrastructure owned or operated by any public or private utility agency; (4) fire hydrant or water valve; (5) access to any doors, gates, sidewalk doors, passage doors, stoops or other ingress and egress points to any building appurtenant to the rights-of-way; or (6) access to any fire escape.
- (e) **Replacement Pole Location.** All replacement poles must: (1) be located as close to the removed pole as possible; (2) be aligned with the other existing poles along the public rights-of-way; and (3) be compliant with all applicable standards and specifications by the identified or required by the Director.
- (f) **Additional Placement Requirements.** In addition to all other requirements in this Policy, small wireless facilities, other infrastructure deployments and all related equipment and improvements shall:
- (1) be placed as close as possible to the property line between two parcels that abuts the public rights-of-way;
  - (2) not be placed directly in front of any door or window;
  - (3) not be placed within any sight distance triangles at any intersections;
  - (4) not be placed in any location that obstructs view lines for traveling vehicles, bicycles and pedestrian;
  - (5) not be placed in any location that obstructs views of any traffic signs or signals;
  - (6) not be placed in any location that obstructs illumination patterns for existing streetlights;
  - (7) be placed at least 15 feet away from any driveway or established pedestrian pathway between a residential structure and the public rights-of-way;
  - (8) be placed at least 50 feet away from any driveways for police/sheriff's stations, fire stations or other emergency responder facilities;
  - (9) use existing or replacement streetlights rather than wood poles whenever technically feasible; and
  - (10) not require new support structures unless the applicant provides clear and convincing evidence demonstrating that a new support structure is the only technically feasible option to the exclusion of any alternative or reasonable combination of alternatives.

## SECTION 11. DESIGN STANDARDS

- (a) **Preface to Design Standards.** The City of Encinitas has a long-standing policy in favor of concealment of personal wireless service facilities (see Encinitas Municipal Code Chapter 9.70) to mitigate the adverse aesthetic impacts on the community from unsightly infrastructure. More recent FCC regulations require local aesthetic requirements to be (1) reasonable, which the FCC defines as technically feasible and directed at avoiding aesthetic harm; (2) no more burdensome than those applied to similarly situated deployments; (3) objective; and (4) published in advance. This Section 11 contains aesthetic regulations that reflect the City's concealment policies through requirements that conform to the FCC's limitations.

Aesthetics depend largely on context and mitigating aesthetic harm from continuously evolving wireless technologies under rigid federal limitations presents a significant challenge. To aid staff, applicants and other stakeholders interpret the design standards in this Section 11 and better understand the City's design objectives, this Section 11(a) sets out general principles that should be considered when applying the specific design standards:

- (1) Antennas, accessory equipment and support structures should be concealed and be in harmony with surroundings. Applicants should utilize all practical means to conceal or minimize the number of facilities and reduce their visual impact, which includes, without limitation using replacement poles designed to be in keeping with the neighborhood aesthetic.
  - (2) Applicants should use building materials, colors and textures designed to harmonize with the natural surroundings and integrate equipment into existing or replacement structures so as to render the facility substantially invisible, or as nearly invisible as reasonably feasible.
  - (3) Antennas, accessory equipment and support structures should be the smallest and as low-profile as technically feasible, taking into considerations the best available solutions for the technologies used in the applicant's deployment.
  - (4) Pole-mounted antennas and accessory equipment should be installed in a manner than minimizes horizontal projections, which includes, without limitation, installing equipment within the pole or as flush to the pole as possible.
  - (5) Support structures and attachments thereto should be the lowest possible height and no taller than similarly situated structures in the vicinity.
  - (6) Non-antenna accessory equipment should be placed underground whenever possible.
  - (7) Surface-mounted accessory equipment should not reduce passable sidewalk space and should be screened with existing or new landscape features, or placed within existing or replacement street furniture, such as benches, bus shelters or kiosks.
- (b) **Finishes.** All exterior surfaces shall be painted, colored and/or wrapped in flat, nonreflective hues that match the underlying support structure or blend with the surrounding environment. All surfaces shall be treated with graffiti-resistant sealant. All finishes shall be subject to the Director's prior approval.

- (c) **Noise.** Small cells and all associated antennas, accessory equipment and other improvements must comply with all applicable noise control standards and regulations in the Encinitas Municipal Code Chapter 9.32 and shall not exceed, either on an individual or cumulative basis, the noise limit in the applicable zone.
- (d) **Lights.** All streetlights and streetlight fixtures must be aimed and shielded so that their illumination effects are directed downwards and confined within the public rights-of-way in a manner consistent with any other standards and specifications by the as identified or required by the Director. All antennas, accessory equipment and other improvements with indicator or status lights must be installed in locations and within enclosures that eliminate illumination impacts visible from publicly accessible areas.
- (e) **Trees and Landscaping.** Small wireless facilities and other infrastructure deployments shall not be installed (in whole or in part) within any tree drip line. Small wireless facilities and other infrastructure deployments may not displace any existing tree or landscape features unless: (A) such displaced tree or landscaping is replaced with native and/or drought-resistant trees, plants or other landscape features approved by the Director and (B) the applicant submits and adheres to a landscape maintenance plan. Only International Society of Arboriculture certified workers under a licensed arborist's supervision shall be used to install the replacement tree(s). Any replacement tree must be substantially the same size as the damaged tree unless approved by the Director. The permittee shall, at all times, be responsible to maintain any replacement landscape features.
- (f) **Signs and Advertisements.** All small wireless facilities and other infrastructure deployments that involve RF transmitters must include signage that accurately identifies the site owner/operator, the owner/operator's site name or identification number and a toll-free number to the owner/operator's network operations center. Small wireless facilities and other infrastructure deployments may not bear any other signage or advertisements unless expressly approved by the City, required by law or recommended under FCC or other United States governmental agencies for compliance with RF emissions regulations.
- (g) **Site Security Measures.** Small wireless facilities and other infrastructure deployments may incorporate reasonable and appropriate site security measures, such as locks and anti-climbing devices, to prevent unauthorized access, theft or vandalism. The Director shall not approve any barbed wire, razor ribbon, electrified fences or any similarly dangerous security measures. All exterior surfaces on small wireless facilities shall be constructed from or coated with graffiti-resistant materials. Cabinets and equipment shroud must be kept secured to prevent unauthorized access.
- (h) **Compliance with Health and Safety Regulations.** All small wireless facilities and other infrastructure deployments shall be designed, constructed, operated and maintained in compliance with all generally applicable health and safety regulations, which includes without limitation all applicable regulations for human exposure to RF emissions and compliance with the federal Americans with Disabilities Act of 1990 (42 U.S.C. §§ 12101 et seq.), the Fair Housing Act Amendments of 1988 and any other applicable disability/handicap accommodation laws.
- (i) **Antennas.** The provisions in this subsection (h) are generally applicable to all antennas.

- (1) **Shrouding.** All antennas and associated cables, jumpers, wires, mounts, masts, brackets and other connectors and hardware must be installed within a single shroud or radome. For pole-top antennas, the shroud shall not exceed 2.5 times the median pole diameter and must taper down to pole. For side-arm antennas, the shroud must cover the cross arm and any cables, jumpers, wires or other connectors between the vertical riser and the antenna.
  - (2) **Antenna Volume.** Each individual antenna associated with a single small cell shall not exceed three cubic feet. The cumulative volume for all antennas on a single small cell shall not exceed: (A) three cubic feet in residential areas; or (B) six cubic feet in nonresidential areas.
  - (3) **Overall Height.** No antenna may extend more than five feet above the support structure, plus any minimum separation between the antenna and other pole attachments required by applicable health and safety regulations.
  - (4) **Horizontal Projection.** Side-mounted antennas, where permitted, shall not project: (A) more than 24 inches from the support structure; (B) over any roadway for vehicular travel; or (C) over any abutting private property. If applicable laws require a side-mounted antenna to project more than 24 inches from the support structure, the projection shall be no greater than required for compliance with such laws.
- (j) **Accessory Equipment Volume.** The cumulative volume for all accessory equipment for a single small wireless facility or other infrastructure deployment shall not exceed: (A) seven cubic feet to the extent feasible, but in no event greater than nine cubic feet in residential areas, or (B) 12 cubic feet in nonresidential areas. The volume limits in this subsection do not apply to any undergrounded accessory equipment.
- (k) **Undergrounded Accessory Equipment.**
- (1) **Where Required.** Accessory equipment (other than any electric meter (where permitted) and an emergency disconnect switch) shall be placed underground when proposed in any (A) underground utility district or (B) any location where the Director finds substantial evidence that the additional above-ground accessory equipment would incommode the public's uses in the public rights-of-way. Notwithstanding the preceding sentence, the Director may grant an exception when the applicant demonstrates by clear and convincing evidence that compliance with this section would be technically infeasible.
  - (2) **Vaults.** All undergrounded accessory equipment must be installed in an environmentally controlled vault that is load-rated to meet the City's standards and specifications. Underground vaults located beneath a sidewalk must be constructed with a slip-resistant cover and properly secured to prevent unauthorized access. Vents for airflow shall be flush-to-grade when placed within the sidewalk and may not exceed two feet above grade when placed off the sidewalk. Vault lids shall not exhibit logos or commercial advertisements.
- (l) **Pole-Mounted Accessory Equipment.** The provisions in this subsection (k) are applicable to all pole-mounted accessory equipment in connection with small wireless facilities and other infrastructure deployments.

- (1) **Preferred Concealment Techniques.** Applicants should propose to place any pole-mounted accessory equipment in the least conspicuous position under the circumstances presented by the proposed pole and location. In general, the least conspicuous position will be the one where the equipment is above eye level and the pole obstructs the equipment from prominent views. Any uncertainty about the least conspicuous position shall be resolved by the Director. Pole-mounted accessory equipment may be installed behind street, traffic or other signs to the extent that the installation complies with applicable public health and safety regulations.
- (2) **Minimum Vertical Clearance.** The lowest point on any pole-mounted accessory equipment shall be at least 10 feet above ground level adjacent to the pole. If applicable laws require any pole-mounted accessory equipment component to be placed less than 10 feet above ground level, the clearance from ground level shall be no less than required for compliance with such laws.
- (3) **Horizontal Projection.** Pole-mounted accessory equipment shall not project: (i) more than 18 inches from the pole surface; (ii) over any roadway for vehicular travel; or (iii) over any abutting private property. All pole-mounted accessory equipment shall be mounted flush to the pole surface. If applicable laws preclude flush-mounted equipment, the separation gap between the pole and the accessory equipment shall be no greater than required for compliance with such laws and concealed by opaque, weatherproof material (such as cabinet "flaps" or "wings") that matches the color and texture of the pole.
- (4) **Orientation.** Unless placed behind a street sign or some other concealment that dictates the equipment orientation on the pole, all pole-mounted accessory equipment should be oriented away from prominent views. In general, the proper orientation will likely be toward the street to reduce the overall profile when viewed from the nearest abutting properties. If orientation toward the street is not feasible, then the proper orientation will most likely be away from oncoming traffic. If more than one orientation would be technically feasible, the Director may select the most appropriate orientation.
- (m) **Ground-Mounted or Base-Mounted Accessory Equipment.** The provisions in this subsection (l) are applicable to all ground-mounted and base-mounted accessory equipment in connection with small wireless facilities and other infrastructure deployments.
  - (1) **Ground-Mounted Concealment.** On collector roads and local roads, the City prefers ground-mounted accessory equipment to be concealed as follows: (A) within a landscaped parkway, median or similar location, behind or among new or existing landscape features and painted or wrapped in flat natural colors to blend with the landscape features; and (B) if landscaping concealment is not technically feasible, disguised as other street furniture adjacent to the support structure, such as, for example, mailboxes, benches or information kiosks. On arterial roads outside underground utility districts, proposed ground-mounted accessory equipment should be completely shrouded or placed in a cabinet substantially similar in appearance to existing ground-mounted accessory equipment cabinets.
  - (2) **Public Safety Visibility.** To promote and protect public health and safety and prevent potential hazards hidden behind large equipment cabinets, no individual ground-mounted accessory equipment cabinet may exceed four feet in height or four feet in

width. Ground-mounted and base-mounted equipment cabinets shall not have any horizontal flat surfaces greater than 1.5 square inches to prevent litter or other objects left on such surfaces.

- (n) **Utilities.** The provisions in this subsection (m) are applicable to all utilities and other related improvements that serve small wireless facilities and other infrastructure deployments.
- (1) **Overhead Lines.** The Director shall not approve any new overhead utility lines in underground utility districts. In areas with existing overhead lines, new communication lines shall be "overlashed" with existing communication lines. No new overhead utility service drops shall be permitted to traverse any roadway used for vehicular transit.
  - (2) **Vertical Cable Risers.** All cables, wires and other connectors must be routed through conduits within the pole or other support structure, and all conduit attachments, cables, wires and other connectors must be concealed from public view. To the extent that cables, wires and other connectors cannot be routed through the pole due to insufficient internal space, the applicant shall replace the pole. Where installations are permitted on wood utility poles, applicants shall route cables, wires and other connectors through a single external conduit or shroud that has been finished to match the underlying pole.
  - (3) **Spools and Coils.** To reduce clutter and deter vandalism, excess fiber optic or coaxial cables shall not be spooled, coiled or otherwise stored on the pole outside equipment cabinets or shrouds.
  - (4) **Electric Meters.** Small cells and other infrastructure deployments shall use flat-rate electric service or other method that obviates the need for a separate above-grade electric meter. If flat-rate service is not available, applicants may install a shrouded smart meter that shall not exceed the width of the pole; provided, however that such smart meter shall be placed at least 10 feet above ground level. If the proposed project involves a ground-mounted equipment cabinet, an electric meter may be integrated with and recessed into the cabinet, but the Director shall not approve a separate ground-mounted electric meter pedestal unless (1) the separate ground-mounted meter pedestal would be placed off the sidewalk and (2) the applicant demonstrates with clear and convincing evidence that all other alternatives for the electric meter are technically infeasible.
  - (5) **Existing Conduit or Circuits.** To reduce unnecessary wear and tear on the public rights-of-way, applicants are encouraged to use existing conduits and/or electric circuits whenever available and technically feasible. Access to any conduit and/or circuits owned by the City shall be subject to the Director's prior written approval, which the Director may withhold or condition as the Director deems necessary or appropriate to protect the City's infrastructure, prevent interference with the City's municipal functions and public health and safety.
- (o) **Fire Safety Standards.** All wireless facilities shall include (1) a power shut off immediately accessible to fire service personnel, such as by means of rapid entry Knox or similar type systems installed as required by the Fire Chief, upon arrival at the scene of a fire and/or anticipated power surge due to power being turned off or on for any reason; (2) surge protection devices capable of mitigating a direct or partial direct lightning discharge; (3)

surge protection devices capable of mitigating significant electrical disturbances that may enter the facility via conductive cables; (4) at least one-hour fire resistant interior surfaces to be used in the composition of all structures. and (5) monitored automatic fire notification and extinguishing systems for all wireless facilities approved by the Fire Chief.

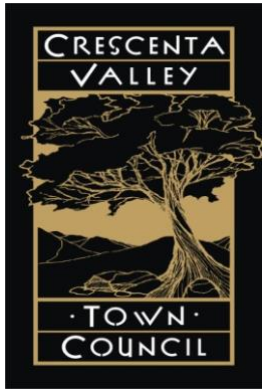
- (p) **Existing Facilities.** To the extent permitted under applicable law, any facilities in existence on the effective date of this policy shall be brought into compliance with these design standards at the earliest opportunity. This requirement shall not be interpreted or applied in a manner that prevents collocations or modifications subject to mandatory approval under 47 U.S.C. § 1455(a).

## **SECTION 12. PREAPPROVED DESIGNS**

- (a) **Purpose.** To expedite the review process and encourage collaborative designs among applicants and the City, the City Council authorizes the Director to designate one or more preapproved designs for small wireless facilities and other infrastructure deployments. This Section 12 sets out the process to establish or repeal a preapproved design and the expedited review procedures and findings applicable to these applications.
- (b) **Adoption.** The Director may, in the Director's discretion, establish a preapproved design when the Director finds that a proposed preapproved design substantially complies with the design standards in this Policy. The Director shall specify the zones, aesthetic environments or other contexts in which any preapproved design type will be applicable. The Director shall post a public notice posted at Encinitas City Hall, with the City Clerk and in a newspaper of general circulation within the City. The notice must generally describe the preapproved design, include a photograph or photo simulation, specify whether the preapproved design would be limited or restricted in any zones and contain a reference to the appeal procedure. Unless appealed pursuant to the Encinitas Municipal Code, the preapproved design shall become effective 15 days from the notice required in this subsection. A decision by the Director not to adopt a proposed preapproved design or the Director's failure to act on a request for a proposed preapproved design is not appealable.
- (c) **Repeal.** The Director may repeal any preapproved design by written notice posted at Encinitas City Hall. The repeal shall be immediately effective. The Director's repeal, refusal to repeal or failure to act on a request to repeal a preapproved design is not appealable.
- (d) **Modified Findings.** When an applicant submits a complete application for a preapproved design, the Director shall presume that the findings for approval in Subsections 8(b)(1) are satisfied and shall evaluate the application for compliance with the findings for approval in the remaining paragraphs of Subsection 8(b).
- (e) **Nondiscrimination.** Any applicant may propose to use any preapproved design whether the applicant initially requested that the Director adopt such preapproved design or not. The Director's decision to adopt a preapproved design expresses no preference or requirement that applicants use the specific vendor or manufacturer that fabricated the design depicted in the preapproved plans. Any other vendor or manufacturer that fabricates a facility to the standards and specifications in the preapproved design with like materials, finishes and overall quality shall be acceptable as a preapproved design.

## SECTION 13 EXCEPTIONS

- (a) **Preface.** The provisions in this Section 13 establish a procedure by which the City may grant an exception to the standards in this Policy but only to the extent necessary to avoid conflict with applicable federal or state law. When the applicant requests an exception, the Director (or the City Council on appeal) shall consider the findings in Subsection 13(b) in addition to the findings required under Subsection 8(b). Each exception is specific to the facts and circumstances in connection with each application. An exception granted in one instance shall not be deemed to create a presumption or expectation that an exception will be granted in any other instance. Other than a request pertaining to placement of a facility in a location described in Section 10(a)(4) (a Very High Fire Hazard Severity Zone), exceptions shall not be approved to override any fire safety or other public safety standard determined to be appropriate by the City.
- (b) **Findings for an Exception.** The Director (or the City Council on appeal) may grant an exception to any provision or requirement in this Policy only if the Director (or City Council on appeal) finds that:
  - (1) a denial based on the application's noncompliance with a specific provision or requirement would violate federal law, state law or both; or
  - (2) a provision in this Policy, as applied to the applicant, would violate any rights or privileges conferred on the applicant by federal or state law.
- (c) **Exception Requests.** An applicant may request an exception only at the time the applicant submits an application in conformance with Section 6(a)(15). The Director (or City Council on appeal) may consider additional information provided by the applicant after submittal to supplement the initial exception request. Any request for an exception after the initial submittal shall be deemed to be a new application.
- (d) **Expert Review.** Due to the technical nature of issues likely to be raised, independent consultant review will generally be appropriate when considering an exception request.
- (e) **Burden of Proof.** The applicant shall have the burden to prove to the Director (or City Council on appeal) that an exception should be granted pursuant to Subsection 13(b). The standard of evidence shall be the same as required by applicable federal or state law for the issue raised in the applicant's request for an exception.
- (f) **Legal Review.** The approval of any exception request shall require the consultation of the City Attorney as to the validity and legal justification for the exception.
- (g) **Scope of Exception.** If the Director (or the City Council on appeal) finds that an exception should be granted, the exception shall be narrowly tailored so that the exception deviates from this Policy to least extent necessary for compliance with federal or state law.



# Crescenta Valley Town Council

January 28, 2019

Kathryn Barger, Fifth District Supervisor  
500 West Temple Street  
Los Angeles, CA 90012

Department of Regional Planning  
Attention: Planning Commissioners  
320 West Temple Street, 13th Floor  
Los Angeles, California 90012

Re: Crescenta Valley 4G and 5G Wireless Telecommunications Facilities Position Statement

Dear Supervisor Barger and Planning Commissioners:

The Crescenta Valley Town Council (CVTC) submits this 4G and 5G Wireless Telecommunications Facilities Position Statement on behalf of the unincorporated town of La Crescenta. In the near future, we anticipate the Los Angeles County Department of Regional Planning (DRP) will receive many applications for 4G and 5G wireless telecommunications facilities attached to public rights of way.

We, the CVTC, have surveyed our residents and gathered feedback (including at a January 16, 2019 Town Hall and an electronic survey), and we submit this 4G and 5G Wireless Telecommunications Facility Position Statement in order to provide the Supervisor's office and the DRP with the majority viewpoint on these installations in La Crescenta. We also request that the DRP enact a specific ordinance regarding 4G and 5G wireless telecommunications facilities in La Crescenta to provide objective criteria to assess all future 4G and 5G wireless telecommunications facility applications.

A total of two hundred and ninety-four (294) individuals signed a petition stating that they do not want 4G and 5G wireless telecommunications facilities in their neighborhoods. Ninety-seven (97) residents signed a door-to-door petition and an additional one-hundred and ninety-seven (197) individuals signed an online petition against additional 4G and 5G wireless telecommunication facilities in La Crescenta. We believe most of those are from the unincorporated area. At a Town Hall meeting specifically organized to discuss 4G and 5G densification in La Crescenta, the overwhelming majority of attendees opposed the installation of any wireless telecommunications facilities in La Crescenta's residential neighborhoods. Residents are also aware that without a specific 4G and 5G wireless telecommunications facility ordinance, the community will be at an unnecessary and significant disadvantage with respect to aesthetics, safety, property values and future liabilities.

Harry Leon  
President

Mike Claessens  
Vice President

Daniel Kim  
Recording Secretary

Desiree P. Rabinov  
Treasurer

Sophal Ear  
Corresponding Secretary

## COUNCIL MEMBERS

Aram Ordubegian

Kyle Studebaker

Jo Ann Stupakis

Carin Hoffman  
1st Alternate

Donna Libra  
2nd Alternate

Jeffrey Rodriguez  
3rd Alternate

"A Community that Cares"

La Crescenta is a small foothill community and has unique attributes that make it difficult to put 4G and 5G wireless facilities in residential areas. La Crescenta neighborhoods lack sidewalks, have narrow roads, homes sit on hilly topography, and are subject to high-wind and high-fire danger warnings. Residents hold the rural character of La Crescenta neighborhoods in high regard. The natural environment of the surroundings as well as the peace and quiet afforded 'foothill living' are primary reasons why residents treasure living in this town.<sup>1</sup>

In our review of DRP rules and regulations, we note that there are no current rules, regulations, or ordinances related specifically to 4G and 5G wireless telecommunication facility installations in the public right-of-way. Furthermore, under the general rules, currently wireless telecommunication facilities can increase *without* public notice and application for a new permit. "Revised Exhibit A" exempts wireless telecommunication facilities from additional permits for increasing the size of its project more than ten percent. We urge the DRP to modify its "Revised Exhibit A" to ensure that wireless telecommunication facilities follow the same rules as any other construction project. Particularly where wireless telecommunication facilities are installed in the public right-of-way, public notice for significant changes in the appearance of these installations is necessary.

Finally, we ask the DRP to implement an ordinance to facilitate the thorough review of applications for 4G and 5G wireless telecommunication facilities in La Crescenta. The main points of the ordinance we would like the DRP to adopt are summarized here:

1. *Residential Set-Backs*: Many La Crescenta neighborhoods do not have sidewalks and utility poles are located directly on properties, in front yards, side yards and/or backyards. La Crescenta also has unique topography due to the mountain it sits on. As a result, some electric pole components are at the same level as homes and schools. Essentially, without proper regulations, wireless transmitter antennas and other components can be visible from bedroom windows. Residents are also well aware of the decrease in their property value due to adverse aesthetics, noise nuisance, and servicing of these facilities. We would like the DRP to adopt an ordinance to ensure transmitters are set back at least 1,000 feet away from any residential property with antennas no lower than 25 feet higher than the highest roof within a 1,000 foot radius of the wireless telecommunications facilities. Finally, there should be a 1,500-foot set back between any two wireless telecommunications facilities of any kind.
2. *Insurance*: La Crescenta is a high-fire risk zone. Any wireless telecommunications facility electrical malfunction can trigger a massive wildfire. We also live in a high-wind area that can potentially cause pieces of the transmitter to fall and cause property damage or harm to residents. Additionally, cars have been known to run into electric poles in this community and cause them

---

<sup>1</sup> As an alternative to wireless infrastructure, we urge the Los Angeles County to implement fiber optics to the home in residential zones to provide faster speeds, while boosting cybersecurity and eliminating the visual blight and noise nuisances of wireless transmitters in our residential neighborhoods. Fiber optics also address the position of the majority of La Crescenta residents who do not wish to have 5G transmitters outside of their properties, thereby giving them the freedom to decide for themselves how they wish to proceed with 5G technology. We ask that a Special Committee be formed to explore this option.

to lean due to our narrow windy roads and lack of sidewalks. We urge the DRP to require wireless carriers to have a minimum of two-million dollars in insurance coverage on each wireless telecommunications facility to cover the potential damages and to hold the carrier liable for any damages caused by their transmitters.

3. Use of Existing Utility Poles: To minimize aesthetic impact on our town, we ask that the ordinance require all wireless telecommunications facilities to be installed on existing poles.

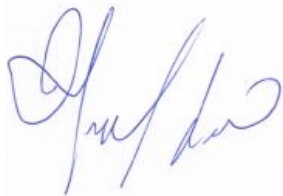
4. Grounding of Electrical Conduits: We ask that all non-antenna equipment be installed underground with silent liquid cooling mechanisms underground for the safety of pedestrians and to preserve the natural character and aesthetics of our mountain community.

5. ADA Compliance: ADA requirements must not be violated for any residents who are or may become ill or disabled from Electromagnetic Sensitivity (EMS), a federally recognized disabling characteristic, recognized by the Federal Access board. EMS is an environmentally induced illness caused by exposures to pulsed, data-modulated, Radio-frequency Electromagnetic Microwave Radiation (RF-EMR), similar to the RF-EMR emitted by 4G and 5G wireless telecommunication facilities.

6. RF-EMR Inspections: The Town shall have the right to employ a qualified RF engineer to conduct random and unannounced tests, a minimum of six times per year, of any operating wireless telecommunications facilities. Any failure to meet FCC, county or municipal RF-EMR limits would result in removal of the installation(s), upon the third offense.

We hope this position statement provides the Supervisor's Office and the DRP valuable feedback on behalf of the La Crescenta community on this quickly emerging area of planning.

Respectfully submitted,



Harry Leon, President

FOR RELEASE NOV. 15, 2019

# Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information

*Majorities think their personal data is less secure now, that data collection poses more risks than benefits, and believe it is not possible to go through daily life without being tracked*

**BY** Brooke Auxier, Lee Rainie, Monica Anderson, Andrew Perrin, Madhu Kumar and Erica Turner

## FOR MEDIA OR OTHER INQUIRIES:

Lee Rainie, Director, Internet and Technology Research  
Monica Anderson, Associate Director  
Shawnee Cohn, Communications Manager

202.419.4372

[www.pewresearch.org](http://www.pewresearch.org)

## RECOMMENDED CITATION

Pew Research Center, November 2019, "Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

## About Pew Research Center

Pew Research Center is a nonpartisan fact tank that informs the public about the issues, attitudes and trends shaping America and the world. It does not take policy positions. It conducts public opinion polling, demographic research, content analysis and other data-driven social science research. The Center studies U.S. politics and policy; journalism and media; internet, science and technology; religion and public life; Hispanic trends; global attitudes and trends; and U.S. social and demographic trends. All of the Center's reports are available at [www.pewresearch.org](http://www.pewresearch.org). Pew Research Center is a subsidiary of The Pew Charitable Trusts, its primary funder.

© Pew Research Center, 2019

## Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information

*Majorities think their personal data is less secure now, that data collection poses more risks than benefits, and believe it is not possible to go through daily life without being tracked*

A majority of Americans believe their online and offline activities are being tracked and monitored by companies and the government with some regularity. It is such a common condition of modern life that roughly six-in-ten U.S. adults say they do not think it is possible to go through daily life *without having data collected about them* by companies or the government.

Data-driven products and services are often marketed with the potential to save users time and money or even lead to [better health](#) and well-being. Still, large shares of U.S. adults are not convinced they benefit from this system of widespread data gathering. Some 81% of the public say that the potential risks they face because of data collection by companies outweigh the benefits, and 66% say the same about government data collection.

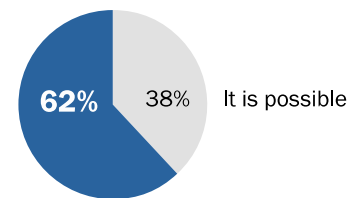
At the same time, a majority of Americans report being concerned about the way their data is being used by companies (79%) or the government (64%). Most also feel they have little or no control over how these entities use their personal information, according to a new survey of U.S. adults by Pew Research Center that explores how Americans feel about the state of privacy in the nation.

### Roughly six-in-ten Americans believe it is not possible to go through daily life without having their data collected

% of U.S. adults who say ...

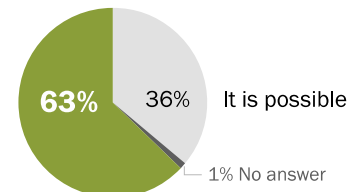
#### COMPANIES

It is not possible to go through daily life without companies collecting data about them



#### THE GOVERNMENT

It is not possible to go through daily life without the government collecting data about them



Note: Respondents were randomly assigned to answer a question about whether they think it is possible to go about daily life without having personal information collected from them by “companies” or “the government.”

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

## What personal data does government collect and access?

Several of the queries of this survey focus on public perceptions of what “the government” does related to personal data. For instance, respondents were asked: “As far as you know, how much of what you do online or on your cellphone is being tracked by the government?” Related questions focused on people’s attitudes about the data the government collects about them.

It is difficult to determine how much personal data the government collects and otherwise can access through private company records. Administrative government agencies like the IRS, Census Bureau, Postal Service and social welfare departments [gather various personal details](#) about people. That includes their tax- and employment-related information, physical attributes if they get a government ID, financial circumstances if they get benefits from social, housing and employment training programs, health information if they participate in government health-insurance programs, addresses, household composition, property ownership if they own houses or cars and educational details if they get student loan or grant, for example. This list is not exhaustive.

Beyond that, national security organizations like the National Security Agency [have authority](#) to monitor phone traffic and [people’s movements](#). With subpoenas or court orders and warrants, [law enforcement organizations](#) can typically access and monitor people’s [phone and traffic](#) records, [health records](#) (including [genetic](#) records), [online and app browsing, search queries, texts and emails](#). Users’ [social media activities](#) and their tech-based social networks are at least at times examined in investigations, according to “[transparency reports](#)” released by the companies.

It is important to note, that there are often [limitations](#) on the ways government agencies can [share what they know](#) with others, including those in other parts of the government.

Americans' concerns about digital privacy extend to those who collect, store and use their personal information. Additionally, majorities of the public are not confident that corporations are good stewards of the data they collect. For example, 79% of Americans say they are not too or not at all confident that companies will admit mistakes and take responsibility if they misuse or compromise personal information, and 69% report having this same lack of confidence that firms will use their personal information in ways they will be comfortable with.

There is also a collective sentiment that data security is more elusive today than in the past. When asked whether they think their personal data is less secure, more secure or about the same as it was five years ago, 70% of adults say their personal data is less secure. Only 6% report that they believe their data is more secure today than it was in the past.

*CORRECTION: In the chart, "Majority of Americans feel as if they have little control over data collected about them by companies and the government," the explanatory text for the findings related to "Risks outweigh benefits" was transcribed incorrectly. The correct text is, "Potential risks of \_\_\_\_ (companies or the government) collecting data about them outweigh the benefits."*

### Majority of Americans feel as if they have little control over data collected about them by companies and the government

% of U.S. adults who say ...

		Companies	The government
<b>Lack of control</b>	They have very little/no control over the data ____ collect(s)	<b>81%</b>	<b>84%</b>
<b>Risks outweigh benefits</b>	Potential risks of ____ collecting data about them outweigh the benefits	<b>81%</b>	<b>66%</b>
<b>Concern over data use</b>	They are very/somewhat concerned about how ____ use(s) the data collected	<b>79%</b>	<b>64%</b>
<b>Lack of understanding about data use</b>	They have very little/no understanding about what ____ do/does with the data collected	<b>59%</b>	<b>78%</b>

Note: Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

But even as the public expresses worry about various aspects of their digital privacy, many Americans acknowledge that they are not always diligent about paying attention to the privacy policies and terms of service they regularly encounter. Fully 97% of Americans say they are ever asked to approve privacy policies, yet only about one-in-five adults overall say they always (9%) or often (13%) read a company's privacy policy before agreeing to it. Some 38% of all adults maintain they sometimes read such policies, but 36% say they never read a company's privacy policy before agreeing to it.

### About eight-in-ten Americans say they are asked to agree to a privacy policy at least monthly, including one-quarter who say this happens almost every day

*% of U.S. adults who say they are asked to agree to the terms and conditions of a company's privacy policy ...*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

Moreover, the practice of reading privacy policies doesn't necessarily guarantee thoroughness. Among adults who say they ever read privacy policies before agreeing to their terms and conditions, only a minority – 22% – say they read them all the way through before agreeing to their terms and conditions.

There is also a general lack of understanding about data privacy laws among the general public: 63% of Americans say they understand very little or nothing at all about the laws and regulations that are currently in place to protect their data privacy.

These findings point to an overall wariness about the state of privacy these days, but there are some circumstances where the public sees value in this type of data-driven environment. For example, pluralities of adults say it is acceptable for poorly performing schools to share data about their students with a nonprofit group seeking to help improve educational outcomes or for the

government to collect data about all Americans to assess who might be a potential terrorist.

These findings come from a survey of 4,272 U.S. adults conducted on Pew Research Center's [American Trends Panel](#) between June 3-17, 2019.

Here are some of the key takeaways:

**Prevalence of tracking:** 72% of Americans report feeling that all, almost all or most of what they do online or while using their cellphone is being tracked by advertisers, technology firms or other companies. Another 19% think some of what they do is being tracked. Close to half (47%) of adults believe at least most of their online activities are being tracked by the government.

When it comes to their offline behavior such as where they are or whom they talk with, 69% believe companies are tracking at least some of that activity. And 56% of Americans think the government is tracking at least some of their activities, like who they are talking to or their whereabouts.

### Not feeling in control of personal data:

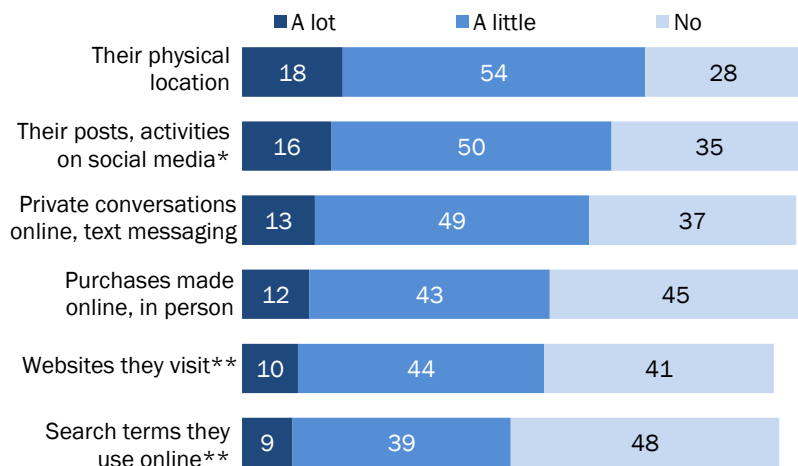
Roughly

eight-in-ten or more U.S.

adults say they have very little or no control over the data that government (84%) or companies (81%) collect about them.

### About half of Americans feel as if they have no control over who can access their online searches

*% who say they feel \_\_\_ control over who can access the following types of their information*



\* Based on social media users.

\*\* Based on internet users.

Note: Respondents were randomly assigned questions about how much control they feel they have over who can access different types of their information. Those who did not give an answer are not shown.

Source: Survey of U.S. adults conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

When it comes to different kinds of information, the picture varies by the specific type. While relatively few Americans feel as if they have a lot of control over who has access to everything from

their physical location to their social media posts, there are experiences in which some Americans especially feel a lack of control. Roughly half of Americans (48%) say they feel as if they have no control over who can access the search terms they use, and 41% say the same about the websites they visit. By comparison, a smaller share of the public feels as if they do not have control over who can access their physical location.

**Risks vs. rewards of data collection and profiling:** 81% of Americans think the potential risks of data collection by companies about them outweigh the benefits, and 66% say the same about government data collection about them. Relatedly, 72% of adults say they personally benefit very little or none from company data collection about them, and 76% say this about the benefits they might get from government data collection.

One aim of the data collection done by companies is for the purpose of profiling customers and potentially targeting the sale of goods and services to them based on their traits and habits. This survey finds that 77% of Americans say they have heard or read at least a bit about how companies and other organizations use personal data to offer targeted advertisements or special deals, or to assess how risky people might be as customers. About 64% of all adults say they have seen ads or solicitations based on their personal data. And 61% of those who have seen ads based on their personal data say the ads accurately reflect their interests and characteristics at least somewhat well. (That amounts to 39% of all adults.)

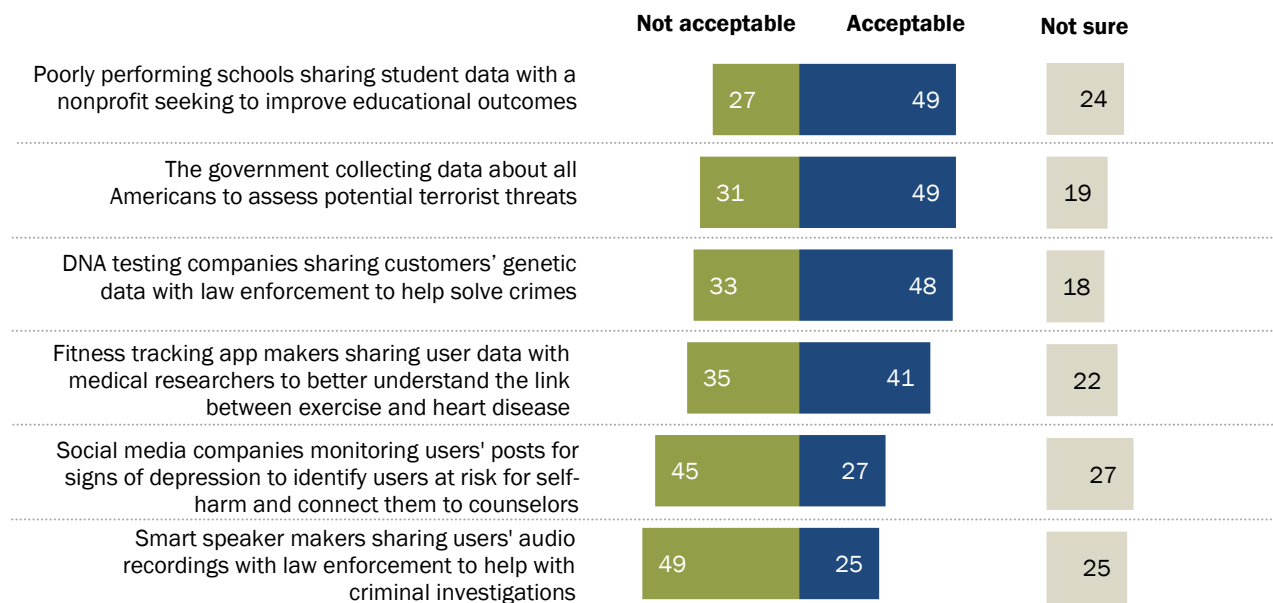
**Data collection and sharing for specific purposes:** Despite their broad concerns about data collection and use by companies and the government, pluralities of U.S. adults say it is acceptable for data to be used in some ways. For instance, by a 49%-27% margin, more Americans find it acceptable than unacceptable for poorly performing schools to share data about their students with a nonprofit group seeking to help improve educational outcomes. Similarly, 49% say it is acceptable for government to collect data about all Americans to assess who might be a potential terrorist threat. That compares with 31% who feel it is unacceptable to collect data from all Americans for that purpose.

On the other hand, more find it unacceptable than acceptable for social media companies to monitor users' posts for signs of depression so they can identify people who are at risk of self-harm and connect them to counseling services (45% vs. 27%). The same pattern arises when it comes to companies that make smart speakers sharing audio recordings of customers with law enforcement to help with criminal investigations: 49% say this it is unacceptable, while 25% find it acceptable.

The public is more evenly divided when it comes to the acceptability of fitness tracking app makers sharing user data with medical researchers to better understand the link between exercise and heart disease.

### Americans are more accepting of using personal data to help improve schools or assess potential terrorist threats, but are more wary of some other data uses

% of U.S. adults who say the following uses of data or personal information are ...



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

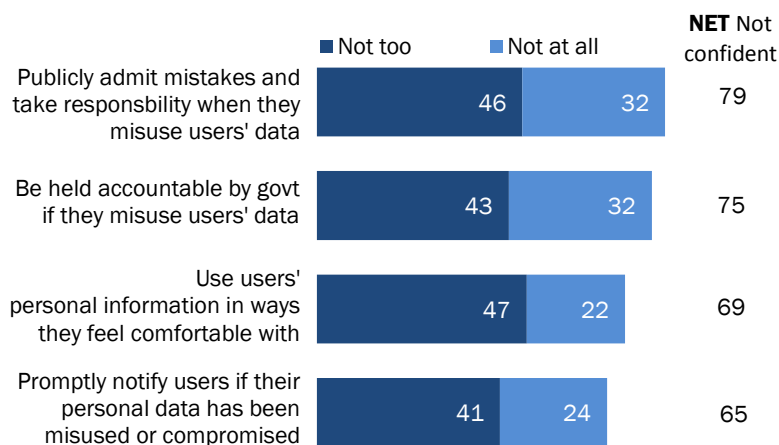
**Concern about how data is used:** 79% of adults assert they are very or somewhat concerned about how companies are using the data they collect about them, while 64% say they have the same level of concern about government data collection.

Separately, Americans have mixed views about which groups concern them in getting access to their data: About four-in-ten are concerned a lot about the personal information social media sites (40%) or advertisers might know about them (39%). But only 9% of Americans worry a lot about the information family and friends might know and 19% have similar concerns about what their employers might know.

Still, the majority of Americans are not confident about the way companies will behave when it comes to using and protecting their personal data. Roughly seven-in-ten or more say they are not too or not at all confident that companies will admit mistakes and take responsibility when they misuse or compromise data (79%), will be held accountable by government if they misuse data (75%), or will use customers' data in ways that people would feel comfortable with (69%).

### Most Americans are not confident that companies would publicly admit to misusing consumers' data

% of U.S. adults who say they are \_\_\_ confident that companies will ...



Note: Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

When it comes to data use for specific purposes, Americans have varying views depending on the purpose for the data use. For example, 57% of adults say they are very or somewhat comfortable with companies using their personal data to help companies improve their fraud prevention systems. But they are evenly split when the issue is their comfort with companies using their personal data in developing new products. About a third (36%) of adults say they are at least somewhat comfortable with companies sharing their personal data with outside groups doing research that might help them improve society, but a larger share (64%) say they would be uncomfortable with this practice.

**Lack of understanding:** 78% of U.S. adults say they understand very little or nothing about what the government does with the data it collects, and 59% say the same about the data companies collect. Only 6% of adults say they understand a great deal what companies do with the data collected, and a similar share (4%) say they know a great deal about what the government does with the data.

Some Americans also admit they struggle to understand the privacy laws that govern use of their data. Roughly six-in-ten Americans (63%) say they have very little or no understanding of the laws and regulations that are currently in place to protect their privacy. Only 3% of adults say they understand these laws a great deal, and 33% say they have some understanding.

**How Americans handle privacy policies:** Core parts of the current system of data collection and privacy protection are built on the idea that consumers are given notice about how firms collect and use data and ask for their consent to having their data used that way. Fully 97% say they are ever asked to approve privacy policies, yet only one-in-five of adults overall say they always (9%) or often (13%) read these policies. Some 38% of U.S. adults maintain they sometimes read such policies, and 36% say they never read a company's privacy policy before agreeing to it. In all, about four-in-ten adults say they understand privacy policies great deal (8%) or some (33%).

In addition to the concerns cited above about how companies handle personal data, a majority of Americans (57%) say they are not too confident (40%) or not at all confident (17%) companies follow what their privacy policies say they will do with users' personal data.

Several other key findings in the survey:

- Roughly three-in-ten Americans (28%) say they have suffered at least one of three kinds of major identity theft problems in the previous 12 months at the time of the survey: 21% have had someone put fraudulent charges on their credit or debit card; 8% have had someone take over their social media or email accounts without their permission; and 6% have had someone try to open a credit line or get a loan using their name.
- A majority of U.S. adults (57%) say they follow privacy news very closely (11%) or somewhat closely (46%).

**There are some differences by age on some privacy issues:** People in different age groups have varying views on some key privacy and surveillance issues. Americans ages 65 and older are less likely than those ages 18 to 29 to feel they have control over who can access things like their physical location, purchases made both online and offline and their private conversations. At the same time, older Americans are less likely to think they benefit from data collection: Just 17% of

those 65 and older believing they benefit from the data government collects about them, and only 19% think the same about data collected by companies.

There are also age differences on the issue of how data gets used once obtained. Americans ages 65 and older are more likely than younger adults to say it is acceptable for law enforcement to use customers' genetic data to help solve crimes, approve data collection to assess terrorist threats, and have smart speaker makers share users' audio recordings in investigations. By contrast, young adults ages 18 to 29 are more likely than older adults to find acceptable the idea that social media companies monitor users for signs of depression and to allow fitness tracking user data to be shared with medical researchers.

In addition, two-thirds of adults ages 65 and older say they follow privacy news at least somewhat closely, compared with just 45% of those 18 to 29 who do the same.

**There are differences by race and ethnicity on some privacy issues:** Black Americans are more likely than white Americans to say they believe the government is tracking all or most of what they do online or on their cellphone (60% vs. 43%). Similar gaps are present in views about offline activities: 47% of black adults think all or most of their offline activities are tracked by the government, compared with just 19% of white adults.

In addition, black and Hispanic adults are more likely than white adults to say they are concerned to some degree about what law enforcement officials, employers and family and friends know about them.

When it comes to identity-theft issues, black adults (20%) are roughly three times as likely as their Hispanic (7%) or white counterparts (6%) to say someone has taken over their social media or email account in the past year. Black Americans are also more likely than white and Hispanic adults to say someone attempted to open a line of credit or applied for a loan using their name in the past 12 months.

At the same time, white adults also report feeling less control across several information types when compared with black and Hispanic adults. For example, 50% of white Americans feel they have control over who can access information about their on- and offline purchases, compared with 69% of black adults and 66% of Hispanic adults.

# 1. How Americans think about privacy and the vulnerability of their personal data

Americans have had a variety of ways of thinking about privacy over the centuries. Though the word “privacy” is not used in the Constitution, the idea that citizens are “to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures” is enshrined in the Fourth Amendment. Before he was a Supreme Court justice, Louis Brandeis proclaimed in a [1890 Harvard Law Review article](#) that Americans enjoyed a “right to privacy,” which he argued was the “right to be let alone.” In a landmark birth control case in 1965, the Supreme Court [embraced the Brandeis view](#), ruling that the right to privacy can be inferred from the First, Third, Fourth, Fifth and 14th Amendments. More modern concepts have focused on Americans’ views that they ought to be able to [control their identity](#) and their personal information.

This new survey asked Americans for their own definitions of the words “privacy” and “digital privacy.” Their written answers were coded into broad categories, and they reveal that across both questions, participants most often mention their concerns about the role other people and organizations can play in learning about them, their desire to shield their personal activities and possessions, and their interest in controlling who is given access to their personal information. By comparison, fewer participants mention third parties and the selling of their information, tracking or monitoring, crime and other threats of illicit activity, or interference from the government.

## In their words: What does privacy mean to you?

*% of U.S. adults who mention the following themes when asked “what does privacy mean to you?”*

Other people and organizations not being able to access their possessions or private life	28%
Control over information, possessions, self; deciding what’s accessible to others	26
Themselves, their personal information and possessions, the desire to keep things to themselves	15
Having their information sold, third party involvement	4
General security references, i.e. “secure,” “guarded,” “protective”	3
Tracking, surveillance, monitoring, spying	2
Privacy is a myth/means nothing/doesn’t exist	2
Crime, hacking, fraud, any threats of illicit activity	2
Threat from the government regarding themselves, possessions or private life	2
Personal information is only accessible with the person’s knowledge or consent	1
Spam, unwanted calls or solicitations	<1
Other	4
Did not answer	17

Note: Verbatim responses have been coded into categories. Results may add to more than 100% because each response could have up to three codes.

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

When asked what privacy means to them, 28% of respondents mention other people or organizations. These quotes are illustrative:

*“Keeping my personal information out of the hands of the big data companies.” – Man, 34*

*“My personal information is secure. No one knows my credit card numbers, address info, where I have been, my banking info, my health info, etc. People don’t know anything about me I do not intend to share.” – Woman, 51*

Around one-quarter (26%) mention control or their ability to decide what aspects of their lives are accessible to others:

*“I have control of all my personal and financial information, no one else can access without my permission.” – Man, 50*

*“Personal privacy means everything about me personally is private unless I personally opt-in to allow it to be public. Opt-in means not by default or convoluted user agreement that circumvents the purpose of privacy laws.” – Man, 57*

Another 15% of respondents focus on themselves and their personal possessions, without referring to outside organizations or people.

*“Privacy is being able to feel like your personal information is safe.” – Woman, 18*

*“That I am in complete control of my personal information.” – Woman, 29*

When asked about “digital privacy,” respondents again focused on similar topics as when they were asked about “privacy:” control, the role of other people and organizations, and themselves and their personal possessions. Some 17% mention only themselves and the protection of their own personal information, making no reference to other people or organizations:

*“Personal information such as [Social Security numbers], banking information, medical records remain private and secure.” – Man, 59*

*“I should be able to surf the web and do it anonymously.” – Woman, 55*

And 14% of respondents mention control and the desire to decide which aspects of their lives are accessible to others:

*“Digital privacy would mean that you could use digital technology without the fear of your information or messages being vulnerable to someone gaining access to it that was not your intended receiver.” – Woman, 72*

*“Having control and ownership of my online data. Have control and the ability to delete information I have not explicitly given the right to use or disseminate.” – Man, 60*

Another 13% mention the role other people or organizations play in their digital privacy:

*“Security and lack of ability to easily find information put into the digital world like on the internet (passwords, ability to find social media posts), via phone/tablet, etc.” – Woman, 34*

*“Activity/data about me and from my interactions with websites and digital services being unavailable to other people.” – Man, 22*

A smaller share of respondents (9%) believe that “digital privacy” is a myth and doesn’t actually exist:

*“Digital privacy does not exist, in my opinion. Once one puts something on a computer that is connected to the internet, privacy is compromised and no longer ‘private.’” – Woman, 75*

### In their words: What does digital privacy mean to you?

*% of U.S. adults who mention the following themes when asked “What does digital privacy mean to you?”*

Themselves, their personal information and possessions, the desire to keep things to themselves	17%
Control over information, possessions, self; deciding what aspects of their lives are accessible to others	14
Other people and organizations not being able to access their possessions or private life	13
Privacy is a myth/means nothing/doesn’t exist	9
Having their information sold, third party involvement	6
Crime, hacking, fraud, any threats of illicit activity	5
General security references, i.e. “secure,” “guarded,” “protective”	4
Tracking, surveillance, monitoring, spying	3
Company measures, how websites/companies should secure data, terms of service, privacy settings	2
Personal information is only accessible with the person’s knowledge or consent	2
Threat from the government regarding themselves, possessions or private life	1
Other	4
Did not answer	31

Note: Verbatim responses have been coded into categories. Results may add to more than 100% because each response could have up to three codes.

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

*“Nothing.... No matter what type of security you think you have, any hacker that wants in will get in. Just a matter of time in my opinion.” – Man, 49*

Many of respondents’ written answers about their definitions of “digital privacy” repeated thoughts that were in answers about “privacy.” At the same time, words like “social media,” “online,” “internet” and “data” were more common when respondents described “digital privacy.”

## Seven-in-ten Americans say they feel as if their data is less secure today than it was five years ago

Large data breaches have become a regular feature of modern life – affecting companies like [Capital One](#), [Facebook](#), [Equifax](#) and [Uber](#). To that end, Pew Research Center surveyed Americans about how they feel about their own personal data. This survey finds that seven-in-ten Americans feel their personal information is less secure than it was five years ago, only 6% say their information is more secure, and about a quarter (24%) feel the situation has not changed.

### Seven-in-ten Americans say their personal information is less secure than it was five years ago

% of U.S. adults who say they feel as if their personal information is \_\_\_ than it was five years ago



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

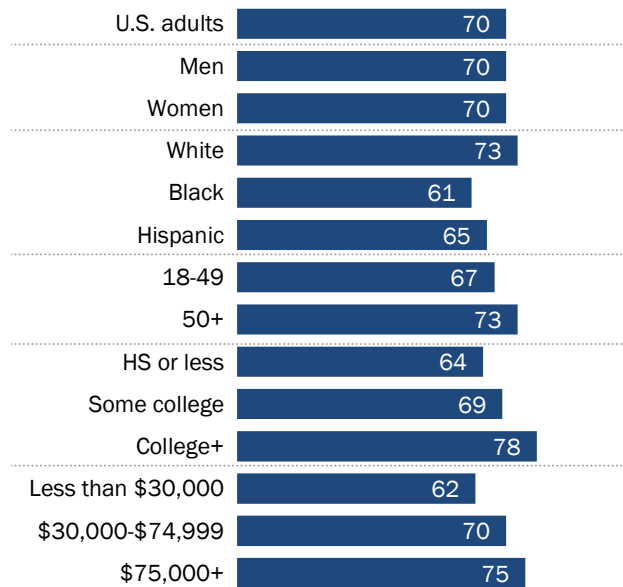
“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

Majorities across demographic groups believe their personal data is less secure than it was in the past, but some groups are more likely to feel this than others. Those with higher levels of educational attainment are more likely to believe things are worse. Fully 78% of those with a bachelor's or advanced degree say their personal information is less secure, compared with 64% of those with a high school education or less. Those over age 50 are also more likely to think their data is less secure, compared with those ages 18 to 49.

## Majorities of Americans think their personal information is less secure today than in the past

*% of U.S. adults who say they feel as if their personal information is **less secure** than it was five years ago*



Note: Whites and blacks include only non-Hispanics. Hispanics are of any race. Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

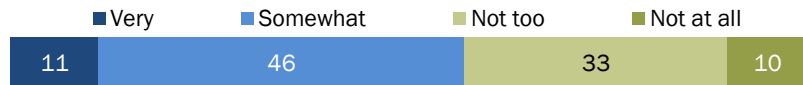
## More than half of the public say they follow privacy news at least somewhat closely

In the midst of this concern, how much attention are Americans paying to privacy issues? Some 57% of Americans say they follow news about privacy very (11%) or somewhat (46%) closely, while 43% say they don't follow it too closely, or at all.

Two-thirds of adults ages 65 and older say they follow privacy news at least somewhat closely, compared with just 45% of those 18 to 29 who do the same. Those living in households earning \$75,000 or more a year are also more likely to follow privacy news at the same rate – with 60% saying they do so – compared with 53% of those with a household income less than \$30,000 saying the same.

## About six-in-ten Americans say they follow privacy news at least somewhat closely

% of U.S. adults who say they follow privacy news \_\_\_ closely



Note: Those who did not give an answer are not shown.

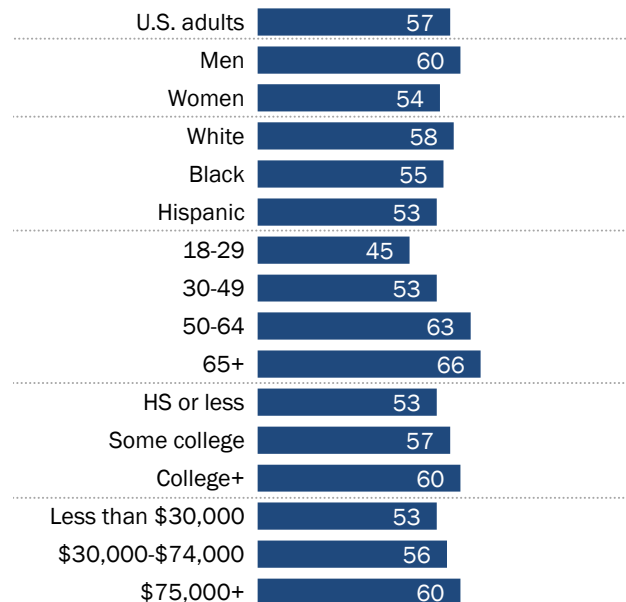
Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

## Older adults are more likely than younger adults to say they pay attention to privacy-related news

% of U.S. adults who say they follow privacy news very or somewhat closely



Note: Whites and blacks include only non-Hispanics. Hispanics are of any race. Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

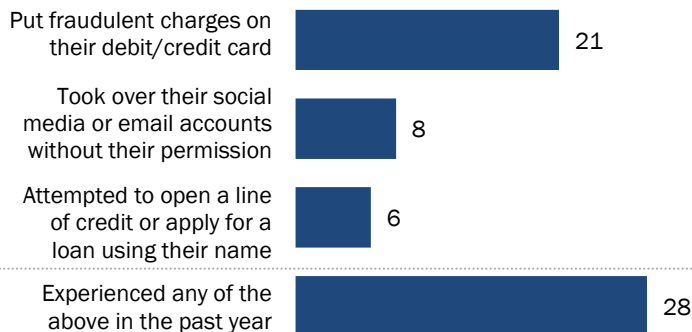
There is little difference, however, between those who follow news about privacy issues and those who do not when it comes to expressing concern about the way things are trending. Some 74% of those who follow privacy news at least somewhat closely believe their data is less secure than it was five years ago and 64% of those who do not follow privacy news too closely also feel the same way.

## Roughly three-in-ten Americans have experienced some kind of data breach in past 12 months

When asked about three different types of data breaches or identity theft, 28% of Americans say they have experienced at least one of them in the past 12 months. About one-in-five adults (21%) say someone has put fraudulent charges on their debit or credit card in the past year, while smaller shares say someone has taken over their social media or email account without their permission, or attempted to open a line of credit or apply for a loan using their name.

### 21% of Americans have had fraudulent charges on their debit or credit cards in the past year

*% of U.S. adults who say that someone has done the following to them in the last 12 months*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

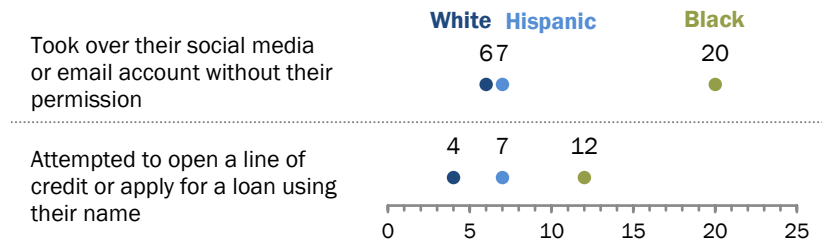
"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

Black adults (20%) are roughly three times as likely as their Hispanic (7%) or white counterparts (6%) to say someone has taken over their social media or email account in the past year. Black Americans are also more likely to say someone attempted to open a line of credit or applied for a loan using their name in the past 12 months, compared with smaller shares of white and Hispanic adults who say the same.

## Black Americans are more likely to experience social media, email breaches

*% of U.S. adults, by race and ethnicity, who say that someone has done the following to them in the last 12 months*



Note: Whites and blacks include only non-Hispanics. Hispanics are of any race. Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Little Control Over Their Personal Information"

PEW RESEARCH CENTER

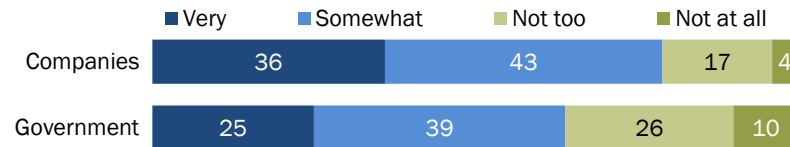
## 2. Americans concerned, feel lack of control over personal data collected by both companies and the government

Americans leave traces of their activities, preferences and personal information in many places, both online and off. And this personal data can be fodder for both companies and the government alike. This chapter explores the public's own experiences and attitudes about their personal data and finds that large shares are worried about the amount of information that entities, like social media companies or advertisers, have about them. At the same time, Americans feel as if they have little to no control over what information is being gathered and are not sold on the benefits that this type of data collection brings to their life.

**Most Americans are concerned about how companies are using their personal data**

### Majority of Americans are concerned about how their personal data is being used by companies and the government

*% of U.S. adults who say they are \_\_\_ concerned about how data collected about them is used by ...*



Note: Respondents were randomly assigned to answer a question about how concerned they are about how data collected about them is used by "companies" or "the government." Those who did not give an answer or who gave other responses are not shown.

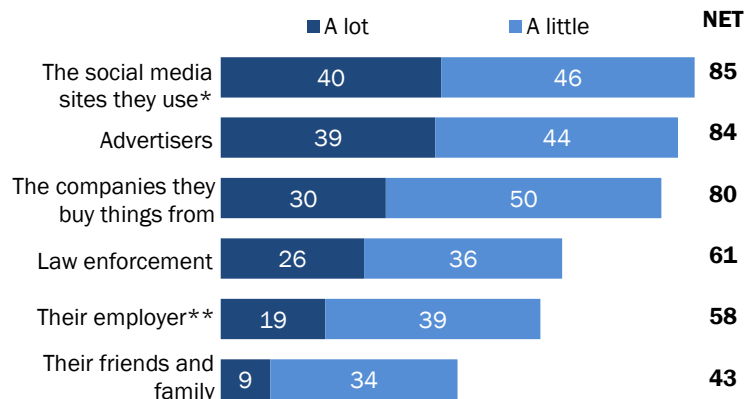
Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

### More than eight-in-ten Americans are concerned about the amount of personal information social media sites and advertisers know about them

*% who say they are concerned a lot or a little about how much personal information \_\_\_ might know about them*



\* Based on social media users.

\*\* Based on those who are employed.

Note: Respondents were randomly assigned questions about how concerned they are about how much information different groups have about them. Those who did not give an answer or who gave other responses are not shown.

Source: Survey of U.S. adults conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

There is widespread concern among the general public about how companies – and the government – are using their personal data. Fully 79% of adults say they are at least somewhat concerned about how companies are using the data it collects about them, including 36% who say they are very concerned about this issue. At the same time, 64% of Americans report they feel very or somewhat concerned about how the government is using the data it collects about them.

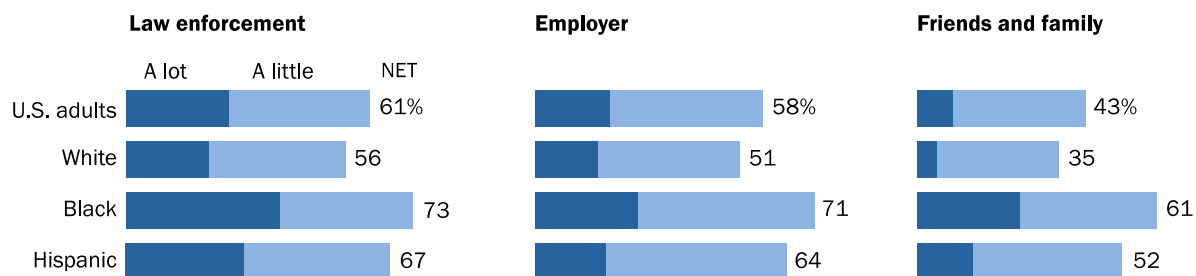
But even as the public has general concerns about data collection, Americans are more wary of certain groups having access to their data than others. At least eight-in-ten adults say they are at least a little concerned about how much personal information social media sites (85%), advertisers (84%), or companies they buy things from (80%) might know about them. The level of concern is felt most acutely when asked about social media sites or advertisers: About four-in-ten Americans say they have *a lot* of concern about how much personal information these respective groups have about them.

Smaller shares – though still a majority – of the public say they are concerned about how much information law enforcement (61%) or their employer (58%) know about them. And 43% of Americans feel this way about their friends and family.

There are some worries that are prevalent among black Americans. For example, black adults are far more likely than their white counterparts to say they are at least a little concerned about the information that their friends or family (61% vs. 35%), employer (71% vs. 51%) or law enforcement (73% vs. 56%) know about them.

### Black and Hispanic Americans are more likely to be concerned about what law enforcement may know about them

*% of U.S. adults who say they are concerned a lot or a little about how much information the following groups may know about them*



Note: Whites and blacks include only non-Hispanics. Hispanics are of any race. Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

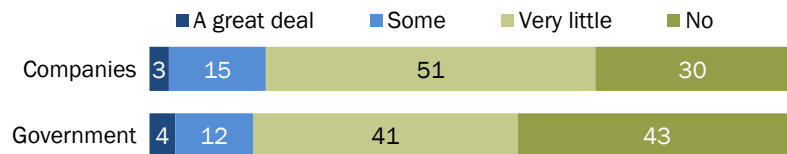
## Relatively few Americans think they have a lot of control over their personal data

The broader conversation of data collection often centers around an individual's ability to safeguard and manage who gets access to their personal information, as well as how certain groups use it. This survey – along with previous [Center surveys](#) – finds that relatively few Americans feel as if they are in control of the information that is gathered about them. Only 19% of adults say they have a great deal or some control over the data that companies collect about them.

And 16% express similar sentiments when asked about the personal data that the government gathers. Put another way, eight-in-ten Americans say they have very little or no control over the data collected about them by the government (84%) or by companies (81%).

### Majority of Americans say they have little to no control over the data that companies or the government collect about them

*% of U.S. adults who say they have \_\_\_ control over data collected about them by ...*



Note: Respondents were randomly assigned to answer a question about how much control they feel they have over data collected about them by “companies” or “the government.” Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

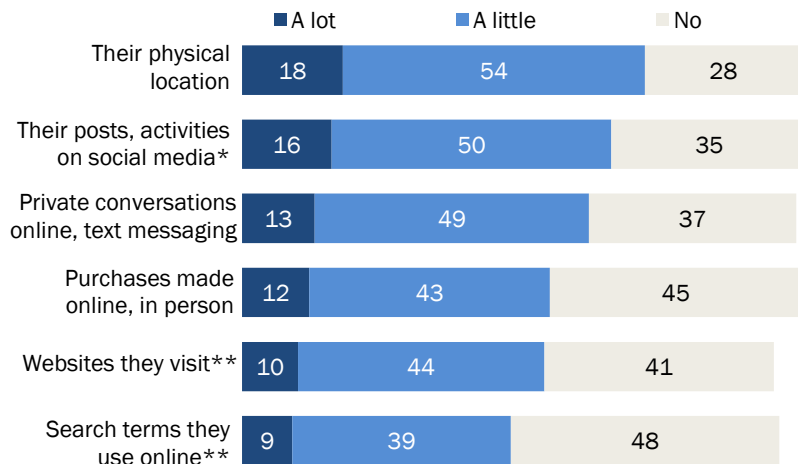
PEW RESEARCH CENTER

Only small shares of Americans feel as if they have a lot of control over who can access their personal information or data. Indeed, only about one-in-five or fewer believe they have a lot of control over any of the six forms of personal information measured in this survey.

At the same time, there are some types of information over which notable shares feel as if they have no control. For example, roughly half of Americans (48%) say they feel they have no control over who can access their online search terms.

## About half of Americans feel as if they have no control over who can access their online search terms

*% who say they feel \_\_\_ control over who can access the following types of their information*



\* Based on social media users.

\*\* Based on internet users.

Note: Respondents were randomly assigned questions about how much control they feel they have over who can access different types of their information. Those who did not give an answer are not shown.

Source: Survey of U.S. adults conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

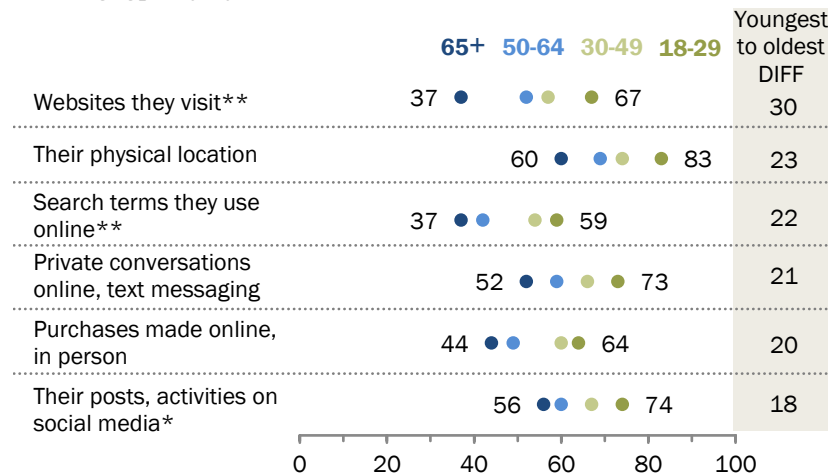
PEW RESEARCH CENTER

Older Americans feel less control across all six information types when compared with younger groups. When considering how much control they have over who has access to the websites they visit, 37% of Americans ages 65 and older say they have a lot or a little control, compared with 67% of those 18 to 29. Adults 65 and older are also less likely than adults under 30 to say they have control over who knows their physical location or has access to their private online or text conversations, for example.

White adults also report feeling less control across all information types when compared with black and Hispanic adults. For example, only 50% of white Americans feel control over who can access information about their on- and offline purchases, compared with 69% of black adults and 66% of Hispanic adults who agree.

### Older and younger adults differ on how much control they have over who can access their personal information

*% who say they have a lot or a little control over who can access the following types of information*



\* Based on social media users.

\*\* Based on internet users.

Note: Respondents were randomly assigned questions about how much control they feel they have over who can access different types of their information. Those who did not give an answer or who gave other responses are not shown.

Source: Survey of U.S. adults conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

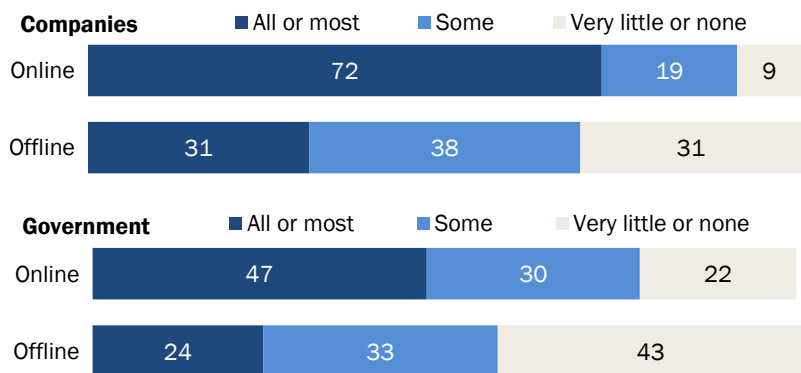
PEW RESEARCH CENTER

## Roughly three-quarters of adults think companies are tracking all or most of what they do online or on their cellphone

A majority of Americans (72%) believe all or most of what they do online or on their cellphone is being tracked by companies, but far fewer (31%) think all or most of their offline activities, like where they go or who they talk to, are being tracked by the same entities. Americans are less likely to think the government is tracking them, both online and off: 47% believe all or most of their online and cellphone activities are being tracked, but only around a quarter (24%) of adults think the same of their offline activities.

### Roughly seven-in-ten Americans think all or most of what they do online is tracked by companies; about half say the same about government

*% of U.S. adults who say \_\_\_ of what they do online or on their cellphone, or offline (like where they go and who they talk to), is being tracked by ...*



Note: Respondents were randomly assigned to answer questions about how much of what they do online and on their cellphone, and offline (like where they go and who they talk to) is being tracked by “companies” or “the government.” Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

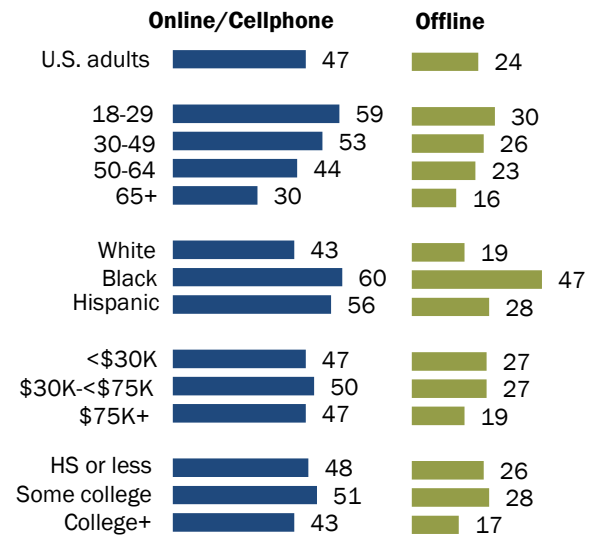
When it comes to Americans' beliefs about whether the government is tracking them, there are differences by race and ethnicity, as well as by age.

For example, black Americans are more likely than white Americans to say they believe the government is tracking all or most of what they do online or on their cellphone (60% vs. 43%). Similar gaps are present in views about offline activities: 47% of black adults think their offline activities are tracked by the government, compared with 19% of white adults.

Younger adults are also more likely than older adults to believe they are being tracked, online and off, by the government. Around 60% of those 18 to 29 believe their online and cellphone activities are being tracked, compared with a smaller share (30%) of those 65 and older. A similar gap exists for offline activities: While 30% of those 18 to 29 think offline activities are being tracked by the government, only 16% of those 65 and older agree. These numbers increase significantly, but follow a similar pattern, when online and offline tracking by companies is considered.

## A majority of black and Hispanic adults believe the government is tracking their online and cellphone activity

*% of U.S. adults who say they believe the government is tracking all or most of their activities ...*



Note: Whites and blacks include only non-Hispanics. Hispanics are of any race. Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

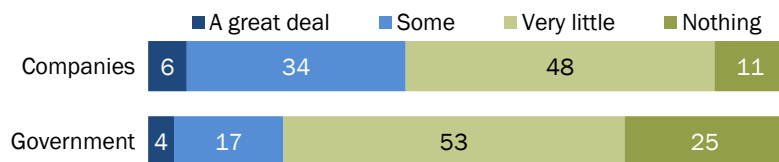
## Relatively small shares of the public say they understand what is being done with the data collected about them

Though many Americans feel their activities are being tracked, online and off, by both companies and the government, very few believe they understand what these entities are doing with the data being collected. Only 6% of adults say they understand a great deal what companies do with the data collected, and a similar share (4%) say they know a great deal about what the government does with the data. In contrast, 78% say they understand very little or nothing about what is being done with their data by the government, and 59% say this about the things companies do.

There are moderate differences in understanding by educational attainment. Those with some college experience are more likely to say they understand what is being done with the data collected about them by both the government and companies. While 46% of those with some college education say they understand at least some about what is being done with the data collected about them by companies, just 38% of those with a college degree or higher and 37% of those with a high school education or less agree. A similar trend follows for understanding of data the government collects.

### Only a minority of the public say they understand what companies or the government do with the data collected about them

*% of U.S. adults who say they understand \_\_\_ about what is being done with the data collected about them by ...*



Note: Respondents were randomly assigned to answer a question about how much they understand about what is being done with the data collected about them by "companies" or "the government." Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

## Roughly 80% of Americans think the risks of companies collecting data about them outweigh the benefits

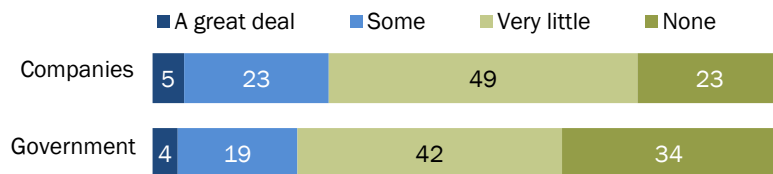
Significant shares of Americans are not convinced they benefit from this level of tracking and data collection. Roughly three-quarters of adults say they benefit very little or none from the data that companies (72%) or the government (76%) collect about them. On the other hand, about three-in-ten Americans (28%) say they get a great deal or some personal benefit from companies' collecting data, and 23% say the same about the government's efforts.

When asked which of the following statements best described how they feel, 81% of adults say that the "potential risks of companies collecting data about them outweigh the benefits," and just 17% say the benefits they get from companies outweigh the risks.

A similar pattern is seen when asked about the government. Two-thirds of Americans say the potential risks from data collection outweigh the benefits, while about one-third (31%) say the benefits outweigh the risks.

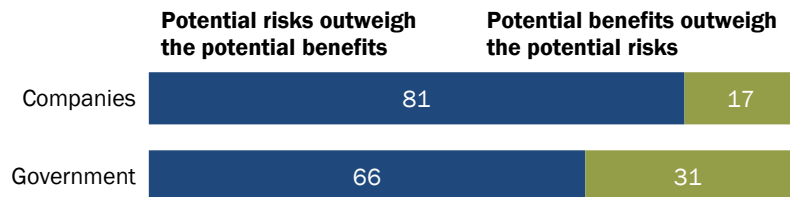
### Relatively few Americans say they personally benefit a lot from the data companies or the government collect about them

*% of U.S. adults who say they benefit \_\_\_ from the data collected about them by ...*



### ... And a majority think the potential risks of data collection outweigh the benefits

*% of U.S. adults who say the \_\_\_ when it comes to data collection by ...*



Note: Respondents were randomly assigned to answer a question about how much they feel they benefit from the data collected about them by "companies" or "the government." Respondents were also randomly assigned to answer a question about whether the potential risks outweigh the potential benefits of data collection, or vice versa, by "companies" or "the government." Those who did not give an answer are not shown. Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

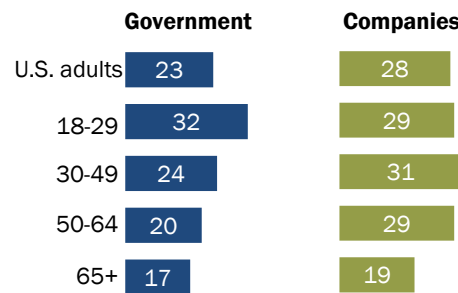
White Americans are less likely to feel they benefit from the collection of data. Only 19% of white adults say they benefit from data collected by the government, and 23% say they benefit from company-collected data. Slightly larger shares of black and Hispanic Americans find more benefit in both: 32% of black adults and 29% of Hispanic adults find data collected by the government

beneficial, and 38% of black adults and 39% of Hispanic adults find benefit in company-collected data.

Older Americans also feel they benefit very little from government and corporate collection of data, with just 17% of those 65 and older believing they benefit from the data government collects about them and only 19% thinking the same about data collected by companies.

### Younger adults are more likely to say they benefit from the data collected about them

*% of U.S. adults who say they benefit a great deal or some from the data collected about them by ...*



Note: Respondents were randomly assigned to answer a question about how much they feel they benefit from the data collected about them by "companies" or "the government." Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

## About six-in-ten Americans do not think it is possible to go about daily life without having companies or government collect personal data

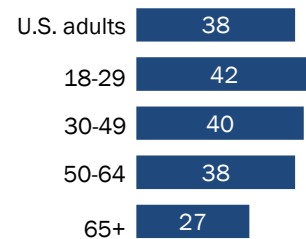
A majority of adults (62%) say they do not think it is possible to go through daily life without having their data collected by companies, and 63% think the same about government data collection. Still, 38% of Americans think it is possible to go about daily life without having their data collected by companies, and 36% say the same about having their data collected by the government.

There are some differences by age, with older adults being more skeptical than their younger counterparts about the possibility of anonymity. While 27% of adults ages 65 and older say it is possible to go about daily life and remain anonymous to companies, that share rises to around 40% among adults under the age of 65.

When considering the idea of anonymity from the government, only 33% of adults in both older demographics (50 to 64 and 65 and older) believe it's possible, compared with a larger share (41%) of those 30 to 49.

### Older Americans less likely to say they can go about life without having their data collected by companies

*% of U.S. adults who say it is possible to go about daily life being anonymous to companies*



Note: Those who did not give an answer or who gave other responses are not shown.  
Source: Survey conducted June 3-17, 2019.  
“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

### 3. Public knowledge and experiences with data-driven ads

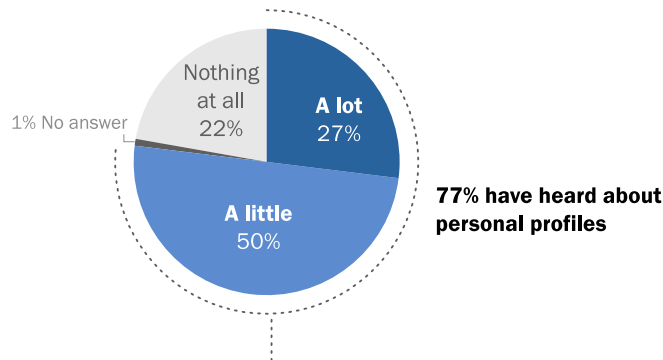
Today, it is possible for companies, advertisers and other organizations to take users' personal data from a [variety of sources](#) to create detailed profiles based on someone's likes, preferences and other characteristics. This survey finds the majority of Americans have heard or read about this concept, and those who have think all or most companies are using profiles to better understand their customers. Among those who are familiar with profiles, a majority reports seeing these ads on a somewhat regular basis.

#### Americans have a broad awareness of data profiles, and it's common for them to see ads based on their personal data

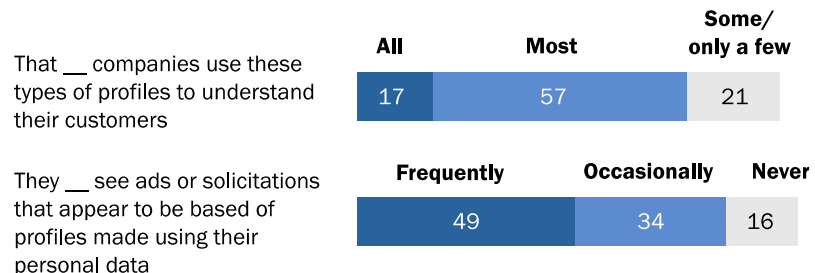
Overall, the public is familiar with the practice of companies and organizations using an individual's experiences and personal data to create detailed user profiles. Most Americans – 77% in total – say they have heard at least a little about how companies and other organizations use personal data to offer things like targeted advertisements, special deals, or to assess how risky people might be as customers, including 27% who say they have heard

#### A majority of Americans have heard about companies creating data profiles, and it's common for those who have to see ads based on their personal data

*% of U.S. adults who say they have heard \_\_\_ about companies and other organizations using data profiles to offer targeted ads, special deals, or to assess how risky people might be as customers*



*Among that 77%, percent who say the following*



Note: Those who did not give an answer or who gave other responses are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

a lot about this concept. About one-in-five adults say they have heard nothing at all about this practice.

### Detailed data profiles: How Pew Research Center asked about targeted ads

Survey respondents were shown the following prompt: “Today it is possible to take personal data about people from many different sources – such as their purchasing and credit histories, their online browsing or search behaviors, or their public voting records – and combine them together to create detailed profiles of people’s potential interests and characteristics. Companies and other organizations use these profiles to offer targeted advertisements or special deals, or to assess how risky people might be as customers.”

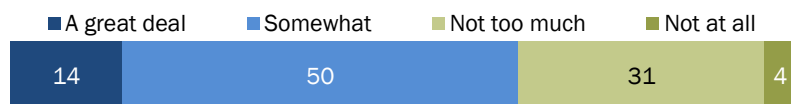
Not only are most Americans aware of this concept, they routinely see them in practice. Roughly eight-in-ten adults who are familiar with these profiles say they occasionally (34%) or frequently (49%) see ads or solicitations that appear to be based on a profile made of them using personal data. Put another way, 64% of all U.S. adults report seeing these types of ads or solicitations.

There is also a general belief that use of personal profiles is fairly common among companies. Among adults who have heard of these profiles, 75% believe that all or most companies use these profiles to help understand their customers. More than half of all adults (57%), regardless of their familiarity with the concept of profiles, say they think all or most companies use this tactic.

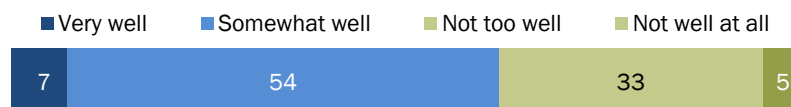
Awareness of these data-driven profiles is relatively widespread across a range of demographic groups, but college graduates and more affluent adults are especially likely to be familiar with both the concept of profiling and the outcome – advertisements apparently targeted at them. Adults with a bachelor’s degree or higher are more likely than those with a high school education or less to

### About six-in-ten Americans who see ads based on their personal data say they reflect their interests

*Among the 83% of U.S. adults who say they frequently or on occasion see ads or solicitations that appear to be based off profiles made using their personal data, the % who say they understand \_\_\_ about what data is being used to create these ads*



*Among the 83% of U.S. adults who say they frequently or on occasion see ads or solicitations that appear to be based off profiles made using their personal data, the % who say these ads accurately reflect their actual interests and characteristics ...*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

say they have heard about personal profiles (87% vs. 69%) or to say they see advertisements that appear to be based off their personal data (93% vs. 73%). Similar patterns are present by household income, with those living in higher-income households being more likely to say they are familiar with the term and that they see these types of ads than those living in lower-income households.

**A majority of Americans who see ads that appear to be based on their personal data say those ads mirror their interests, characteristics**

Respondents who say they have seen ads based on their personal data were asked a follow-up question about how much they understood about the data collection associated with such targeted advertising.

Fully 64% of adults who have ever seen ads that appear to be based on their personal data say they at least somewhat understand what personal data is being used to create targeted advertisements, with 14% saying they understand a great deal. Still, some ad-seers are less sure about the concept: 35% say they understand not much or at all the type of personal data being used to create these ads. When all American adults are considered, 41% say they understand what data is used to create these ads.

Additionally, a majority of ad-seers think these types of ads accurately reflect who they are. Around six-in-ten adults who see these ads (61%) say they accurately reflect their interests and characteristics. Still, relatively few in this group – just 7% – say these ads accurately reflect who they are very well. (The share who say these ads reflect them at least somewhat well is 39% among all U.S. adults.)

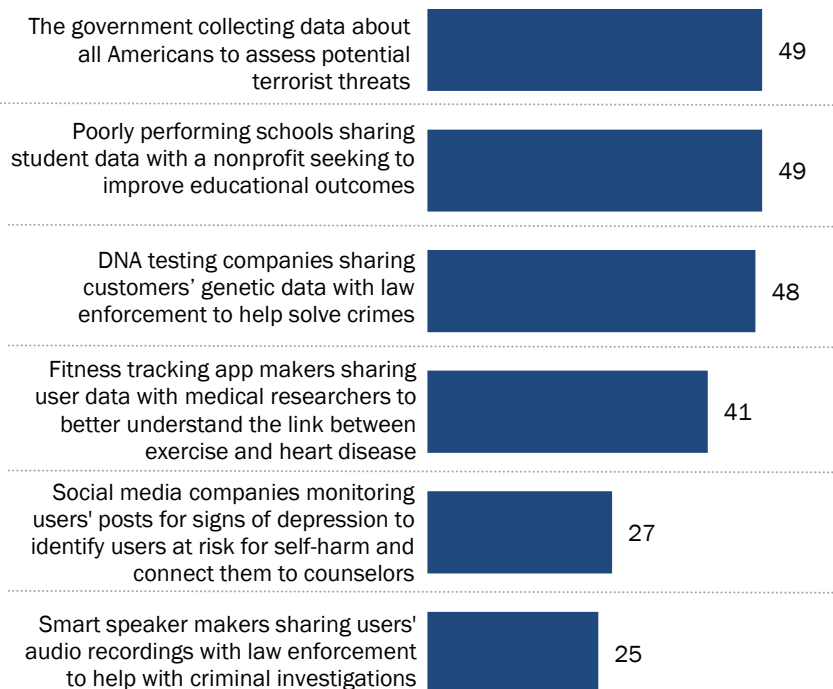
## Roughly half think it's acceptable for the government to collect data to assess terrorist threats, but fewer say it's appropriate for social media sites to monitor users for signs of depression

Personal data is used for a range of purposes by companies and the government. The findings reported in [Chapter 2](#) show that Americans express general concern about the data collected but that the public finds some uses more acceptable than others. This diversity of thought is evident when adults consider some of the purposes of the data collection.

When asked whether it was acceptable or not for a poorly performing school to share student data with a nonprofit group in an effort to improve educational outcomes, roughly half of Americans (49%) say they consider this to be an acceptable form of data sharing. The same share of the public also believes it's acceptable for the government to collect Americans' data to assess who might be a potential terrorist threat.

### Americans more supportive of certain types of data uses than others

*% of U.S. adults who say the following uses of data or personal information are acceptable*



Note: Those who did not give an answer or who gave other responses are not shown.  
Source: Survey conducted June 3-17, 2019.  
"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

Additionally, a similar share of Americans (48%) think it's acceptable for DNA testing companies, like AncestryDNA and 23andMe, to share their customers' genetic data with law enforcement agencies in order to help solve crimes.

Still, other forms of data collection are deemed less acceptable by the public.

About four-in-ten adults (41%) find it acceptable for makers of fitness tracking apps to share user data with medical researchers to better understand the link between exercise and heart disease, compared with 35% who say this is unacceptable.

And just 25% of Americans find it acceptable for the makers of smart speakers to share audio recordings of their customers with law enforcement to help with criminal investigations. A similar share (27%) finds it acceptable for a social media company to monitor users' posts for signs of depression in order to identify individuals at risk of self-harm and connect them to counseling services. In these scenarios, 49% and 45% respectively say they are unacceptable forms of data use.

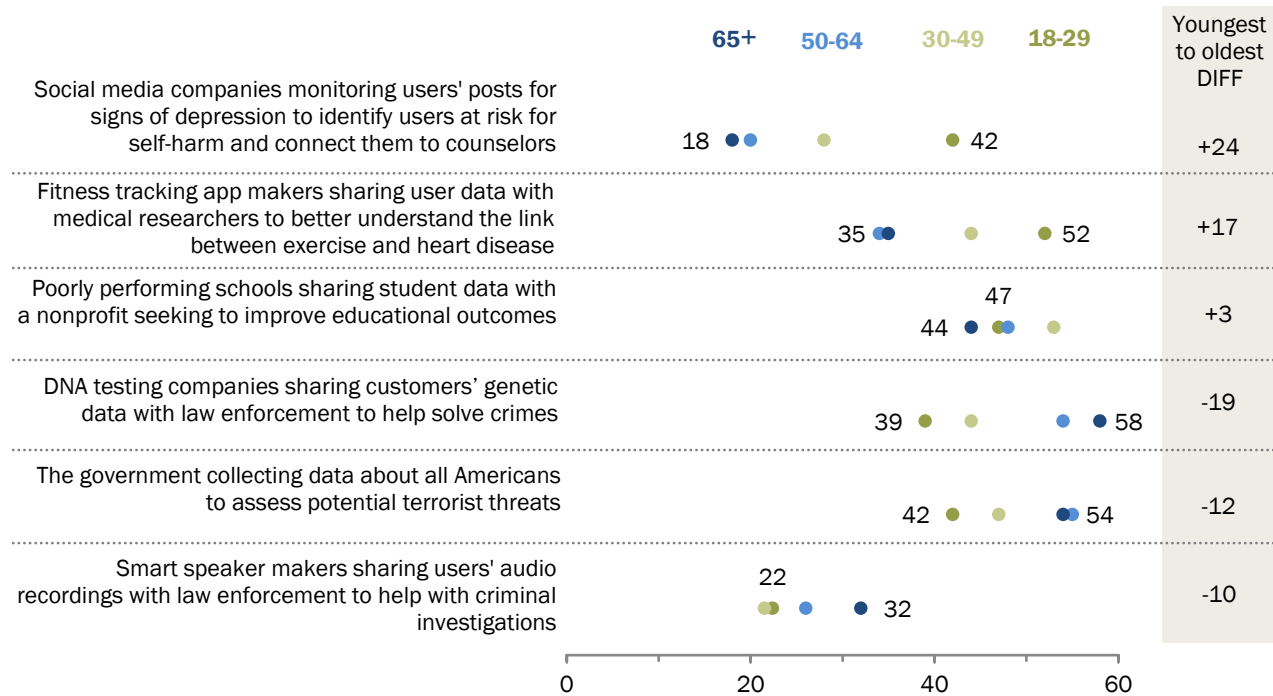
But even as Americans' assessments of these practices tend to differ by the type of data being collected and the purpose of its use, at least 20% of adults say they are unsure about their acceptability in each of these specific scenarios. For example, 27% of adults say they are unsure if social media companies checking users for signs of depression in order to get them help is acceptable or not, and 24% say the same about low-performing schools sharing student data with nonprofits.

### **Older and younger Americans tend to differ over the appropriateness of certain corporate and government uses of people's personal data**

The public's views on whether certain types of data use are appropriate tend to differ by age. Adults ages 18 to 29 are more likely than those 65 and older to say it is acceptable for makers of fitness tracking apps to share data with medical researchers to better understand the link between exercise and heart disease (52% vs. 35%) or for social media companies to monitor user posts for signs of depression so they can identify people at risk of self-harm and connect them to counseling services (42% vs. 18%).

## Older and younger adults differ on the acceptability of certain data sharing practices by companies, the government

% of U.S. adults, by age group, who say the following uses of data or personal information are acceptable



Notes: Those who did not give an answer or who gave other answers are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

But there are other instances in which older groups are more supportive of data sharing. Roughly six-in-ten adults ages 65 and older (58%) say it's acceptable for DNA testing companies to share customers' genetic data with law enforcement to help solve crimes, compared with 39% of those ages 18 to 29. Older adults are also more likely than younger adults to believe that the government collecting Americans' data to assess terrorist threats or makers of smart speakers sharing audio recordings with law enforcement to help with investigations is an acceptable form of data use. However, attitudes about schools sharing student data with a nonprofit are relatively similar, with 44% of those 65 and older finding this acceptable, compared with 47% of those 18 to 29 who say the same.

## 4. Americans' attitudes and experiences with privacy policies and laws

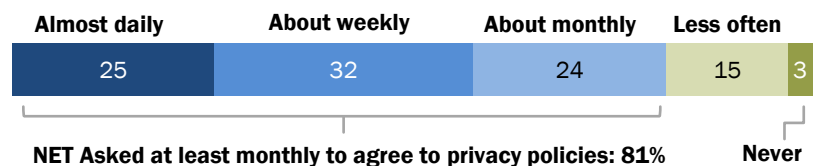
Many Americans have little to no understanding of what companies are doing with the data that is collected about them. At the same time, nearly all Americans encounter companies' privacy policies at some point. This survey explores whether they fully read them and how much they understand about these policies.

### Most Americans have been asked to agree to a privacy policy; while many read them, relatively few read these policies regularly

Privacy policies have become a common feature of public life. One-quarter of adults say they are asked to agree to the terms and conditions of a company's privacy policy on an almost daily basis, while 32% say this happens about once a week; another 24% say they are asked for this roughly once a month. In total, 97% of Americans say they have ever been asked to agree to the terms and conditions of a company's privacy policy.

#### A majority of Americans are asked to agree to privacy policies at least monthly, including a quarter who say this happens daily

*% of U.S. adults who say they are asked to agree to the terms and conditions of a company's privacy policy ...*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

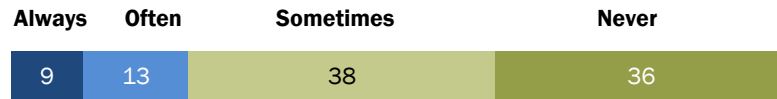
While nearly all Americans are asked to agree to terms and conditions of a company's privacy policy, relatively few report reading these policies on a regular basis.

Just 9% of adults say they always read a company's privacy policy before agreeing to the terms and conditions, while an additional 13% say they do this often. And additionally, 38% of Americans say they sometimes read these policies. There is also a segment of the population who forgo reading these policies altogether: More than a third of adults (36%) say they never read a privacy policy before agreeing to it.

There are some demographic differences in reading privacy policies. Fully 68% of adults living in households with an annual income of \$30,000 or less say they ever read privacy policies, compared with 52% of those whose family income is \$75,000 or more a year. Women are more likely than men to say they ever read a company's privacy policy before agreeing to it (65% vs. 55%). And adults ages 50 and older are more likely than those under 50 to ever read privacy policies (65% vs. 56%).

### About one-in-five Americans say they always or often read privacy policies before agreeing to them

*% of U.S. adults who say they \_\_\_ read before agreeing to a company's privacy policy when they are asked to*



**NET Always or often reads privacy policies: 22%**

Note: Those who did not give an answer or who have never been asked to agree to a privacy policy are not shown.

Source: Survey conducted June 3-17, 2019.

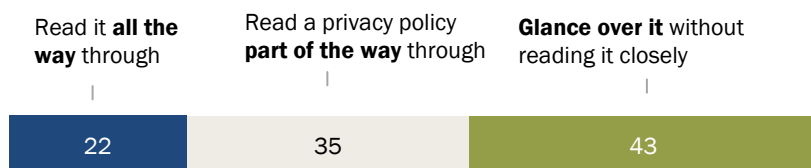
"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

But the practice of reading privacy policies doesn't necessarily guarantee thoroughness. Among adults who say they ever read privacy policies before agreeing to their terms and conditions, only a minority (22%) say they read them all the way through before agreeing to their terms and conditions. It's more common for these readers to say they either glance over it without it reading closely (43%) or say they only read it part of the way through. Among all U.S. adults, 13% say they read privacy policies all the way through, 21% read part of the way through and 26% glance over them.

### Only a minority of Americans who read privacy policies say they read them all the way through

*Among the 60% of U.S. adults who say they ever read privacy policies before agreeing to them, the % who say they typically ...*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

There are few demographic differences among adults who read privacy policies in full. For example, those living in households with an annual income of \$30,000 or less are twice as likely as

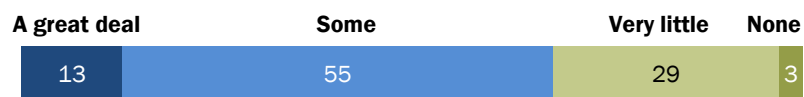
those in households with an annual income of \$75,000 or more to say they read all the way through (30% vs. 15%). And while 26% of adults ages 65 and older say they read privacy policies all the way through, that share falls to 15% among those ages 18 to 29.

### A majority of adults who read privacy policies say they typically understand them

Roughly two-thirds of adults who read privacy policies say they typically understand a great deal (13%) or some (55%) of the policies that they read. Still, about one-third of this group has a lesser grasp of the privacy policies they read, including 29% who say they understand very little and 3% who do not understand at all. Among all U.S. adults, 8% say they understand privacy policies a great deal, 33% understand some, 18% understand very little and 2% do not understand them at all.

#### About two-thirds of U.S. adults who read privacy policies say they understand at least some of them

*Among the 60% of U.S. adults who say they read privacy policies before agreeing to them, the % of who say they typically understand \_\_\_ of them*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

### Americans have little confidence in companies' accountability with their data

When asked how confident they are that companies will do certain things to protect them, relatively few Americans feel assured. In fact, clear majorities of adults show little to no confidence that companies will follow through with certain actions.

Just 21% of adults say they are very (3%) or somewhat (18%) confident that companies will publicly admit mistakes and take responsibility when they misuse or compromise their users' personal data, while 79% of adults are "not too confident" or "not confident at all" about this. A similar share (24%) are confident that a company will be held accountable by the government if they misuse or compromise their data, while 75% are not confident about this.

Even though majorities still have little confidence in companies, about one-third of adults or more are at least somewhat confident in companies to use personal information in ways they feel comfortable with (31%), promptly notify them if personal data has been misused or compromised (35%) or follow what their privacy policies say they will do with personal information (42%).

### Americans have varying levels of comfort with companies using their personal data in different ways

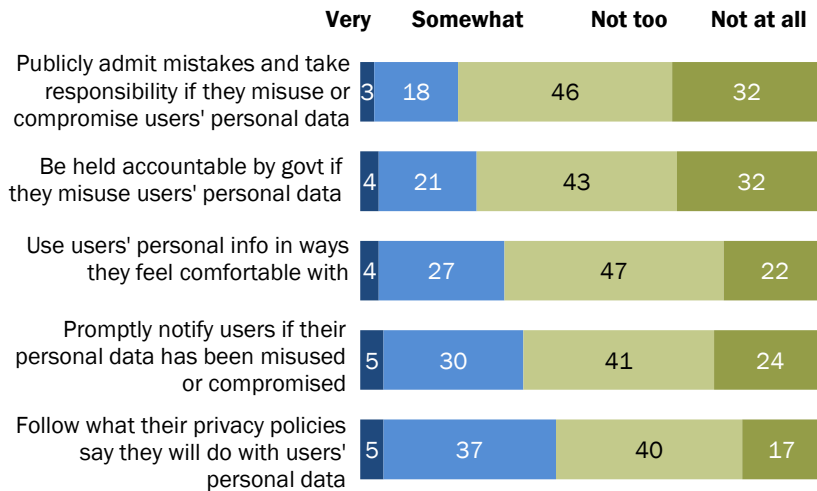
As a whole, the public feels more comfortable with companies using their personal information for certain purposes than others. For example, 57% of adults say they are very or somewhat comfortable with companies using their personal data to help companies improve their fraud prevention systems. Americans' views are split on companies using their personal data to help them develop new products: 50% are at least somewhat comfortable, and 49% are not too comfortable or not comfortable at all.

Adults are less positive toward other ways that companies may use their data. About a third of adults (36%) say they are at least somewhat comfortable with companies sharing their personal data with outside groups doing research that might help them improve society, but a larger share (64%) say they would be uncomfortable with this practice.

Younger adults are generally more comfortable with these uses of their private data, while older adults are less comfortable. Adults under 50 years old are more likely than those who are 50 and older to be at least somewhat comfortable with their personal data being shared with outside

### Most Americans are not confident that companies would publicly admit to misusing consumers' data

*% of U.S. adults who say they are \_\_\_ confident that companies will do the following things*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

groups doing research that might help improve society (42% vs. 29%). By comparison, adults ages 50 and older are more likely than those under 50 to not be comfortable with this (70% vs. 58%).

There are partisan differences on some of these companies' uses of personal data. Democrats, including independents who lean to the Democratic Party, are more likely than Republicans and Republican-leaning

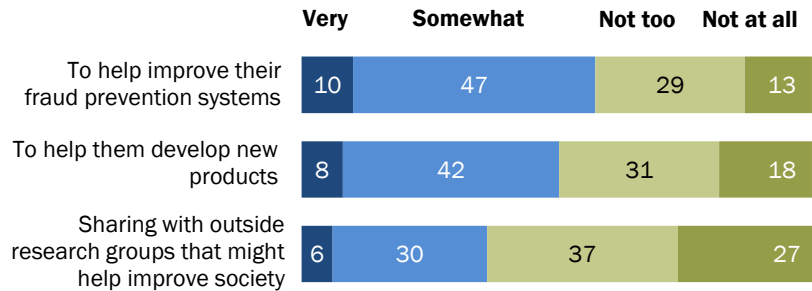
independents to be comfortable with companies sharing their personal data with outside groups doing research that might help improve society (42% vs. 28%) and using their data to help improve their fraud prevention systems (61% vs. 54%).

## Only about one-third of adults say they understand current data protection laws

Americans were asked how much they understand the laws and regulations that are currently in place to protect their data privacy. Some 37% say they understand the laws and regulations some (33%) or a great deal (3%). Nearly two-thirds (63%) of adults say they do not understand the laws and regulations that are currently in place to protect their data privacy.

### The public has varying levels of comfort when it comes to how companies' use their personal data

*% of U.S. adults who say they are \_\_\_ comfortable with companies using their personal data in the following ways*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

### A majority of Americans say they have little to no understanding of existing data protection laws

*% of U.S. adults who say they feel they understand the laws and regulations that are currently in place to protect their data privacy ...*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

"Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information"

PEW RESEARCH CENTER

This includes 49% who say they understand the laws “very little” and 14% who do not understand them at all.

Americans who are more knowledgeable about how their data is being used are more likely to say they understand privacy-related laws and protections. Among adults who have a great deal or some understanding of how companies use their data, 56% say they understand at least some about current data privacy protection laws and regulations; compared with 24% among those who understand very little or nothing about how their data is used by companies.

A similar pattern exists when it comes to government use of data: 59% of those who understand a great deal or some about how their data is used by government say they understand at least some about the data privacy laws and regulations versus 30% among those who understand very little or none about how their data is used. Adults who believe they don’t benefit from how companies or the government uses their data are also more likely to have little understanding of these privacy laws.

## Americans strongly favor more government regulation of consumer data

When asked how much government regulation there should be around what companies can do with their customers’

personal information, 75% of adults say there should be more regulation than there is now. About one-in-ten (8%) feel companies should be regulated less than they are now, while 16% say there should be the about same amount of regulation.

Although a majority of both Republicans and Democrats agree that companies use of personal data should be regulated more than they are now, Democrats (including

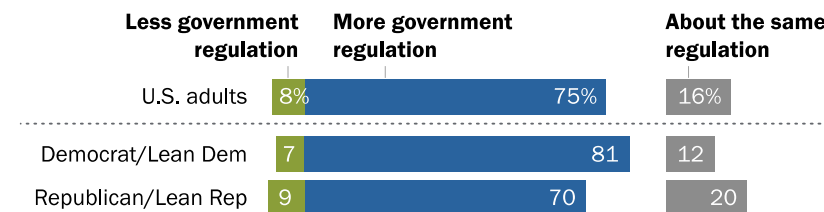
independents who lean towards the Democratic party) are more likely than Republicans and Republican leaners to believe there should be more government regulation of what companies can do with their customers’ personal information (81% vs. 70%).

There are also differences by the amount of attention people to privacy-related news. Adults who follow privacy news closely are also more likely than those who don’t to say there should be more government regulation (79% vs. 68%).

But when given a choice of whether they favor better tools for consumers or

### Most Americans think there should be more government regulation of what companies can do with personal data

*% of U.S. adults who say they think there should be \_\_\_ of what companies can do with their customers’ personal information*



Note: Those who did not give an answer are not shown.

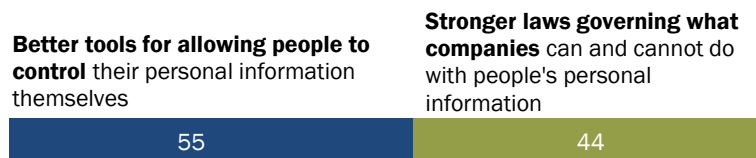
Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

### Americans are somewhat more likely to favor better consumer tools than stronger laws to help safeguard personal data

*% of U.S. adults say they think \_\_\_ would be a more effective way to safeguard people’s personal information*



Note: Those who did not give an answer are not shown.

Source: Survey conducted June 3-17, 2019.

“Americans and Privacy: Concerned, Confused and Feeling Lack of Control Over Their Personal Information”

PEW RESEARCH CENTER

stricter laws to safeguard people's personal information, a somewhat higher share of the public favored better consumer tools. Fully 55% of adults say better tools for allowing people to control their personal information themselves would be a more effective way to safeguard people's personal information. On the other hand, 44% of Americans say that stronger laws governing what companies can and cannot do with people's personal information would be the more effective strategy.

## Acknowledgments

This report is a collaborative effort based on the input and analysis of the following individuals. Find related reports online at [pewresearch.org/internet](https://www.pewresearch.org/internet).

### Primary researchers

Brooke Auxier, *Research Associate*  
Lee Rainie, *Director, Internet and Technology Research*  
Monica Anderson, *Associate Director*  
Andrew Perrin, *Research Analyst*  
Madhu Kumar, *Research Assistant*  
Erica Turner, *Research Intern*

### Research team

Aaron Smith, *Director, Data Labs*  
Emily Vogels, *Research Associate*  
Skye Toor, *Data Science Assistant*

### Editorial and graphic design

Margaret Porteus, *Information Graphics Designer*  
David Kent, *Copy Editor*

### Communications and web publishing

Shawnee Cohn, *Communications Manager*  
Sara Atske, *Associate Digital Producer*

## Methodology

### The American Trends Panel survey methodology

The American Trends Panel (ATP), created by Pew Research Center, is a nationally representative panel of randomly selected U.S. adults. Panelists participate via self-administered web surveys. Panelists who do not have internet access at home are provided with a tablet and wireless internet connection. The panel is being managed by Ipsos.

Data in this report are drawn from the panel wave conducted June 3 to June 17, 2019. A total of 4,272 panelists responded out of 5,869 who were sampled, for a response rate of 73%. This does not include six panelists who were removed from the data due to extremely high rates of refusal or straightlining. The cumulative response rate accounting for nonresponse to the recruitment surveys and attrition is 5.1%. The break-off rate among panelists who logged onto the survey and completed at least one item is 1.7%. The margin of sampling error for the full sample of 4,272 respondents is plus or minus 1.9 percentage points.

#### American Trends Panel recruitment surveys

Recruitment dates	Mode	Invited	Joined	Active panelists remaining
Jan. 23 to March 16, 2014	Landline/ cell RDD	9,809	5,338	2,503
Aug. 27 to Oct. 4, 2015	Landline/ cell RDD	6,004	2,976	1,464
April 25 to June 4, 2017	Landline/ cell RDD	3,905	1,628	801
Aug. 8 to Oct. 31, 2018	ABS/web	9,396	8,778	8,691
	<b>Total</b>	<b>29,114</b>	<b>18,720</b>	<b>13,459</b>

Note: Approximately once per year, panelists who have not participated in multiple consecutive waves or who did not complete an annual profiling survey are removed from the panel. Panelists also become inactive if they ask to be removed from the panel.

PEW RESEARCH CENTER

The subsample from the ATP was selected by grouping panelists into five strata so demographic groups that are underrepresented in the panel had a higher probability of selection than overrepresented groups:

- Stratum A consists of panelists who are non-internet users. They were sampled at a rate of 100%.
- Stratum B consists of panelists with a high school education or less. They were sampled at a rate of 98.9%.
- Stratum C consists of panelists that are Hispanic, unregistered to vote, or non-volunteers. They were sampled at a rate of 44.8%.

- Stratum D consists of panelists that are black or 18-34 years old. They were sampled at a rate of 18.2%.
- Stratum E consists of the remaining panelists. They were sampled at a rate of 13.5%.

The ATP was created in 2014, with the first cohort of panelists invited to join the panel at the end of a large, national, landline and cellphone random-digit-dial survey that was conducted in both English and Spanish. Two additional recruitments were conducted using the same method in 2015 and 2017, respectively. Across these three surveys, a total of 19,718 adults were invited to join the ATP, of which 9,942 agreed to participate.

In August 2018, the ATP switched from telephone to address-based recruitment. Invitations were sent to a random, address-based sample (ABS) of households selected from the U.S. Postal Service's Delivery Sequence File. In each household, the adult with the next birthday was asked to go online to complete a survey, at the end of which they were invited to join the panel. For a random half-sample of invitations, households without internet access were instructed to return a postcard. These households were contacted by telephone and sent a tablet if they agreed to participate. A total of 9,396 were invited to join the panel, and 8,778 agreed to join the panel and completed an initial profile survey. Of the 18,720 individuals who have ever joined the ATP, 13,459 remained active panelists and continued to receive survey invitations at the time this survey was conducted.

The U.S. Postal Service's Delivery Sequence File has been estimated to cover as much as 98% of the population, although some studies suggest that the coverage could be in the low 90% range.<sup>1</sup>

---

<sup>1</sup> AAPOR Task Force on Address-based Sampling. 2016. "[AAPOR Report: Address-based Sampling](#)."

## Weighting

The ATP data were weighted in a multistep process that begins with a base weight incorporating the respondents' original survey selection probability and the fact that in 2014 and 2017 some respondents were subsampled for invitation to the panel. The next step in the weighting uses an iterative technique that aligns the sample to population benchmarks on the dimensions listed in the accompanying table.

Sampling errors and test of statistical-significance take into account the effect of weighting. Interviews are conducted in both English and Spanish, but the American Trends Panel's Hispanic sample is predominantly U.S. born and English speaking.

In addition to sampling error, one should bear in mind that question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of opinion polls.

The following table shows the unweighted sample sizes and the error attributable to sampling that would be expected at the 95% level of confidence for different groups in the survey:

## Weighting dimensions

Variable	Benchmark source
Gender	2017 American Community Survey
Age	
Education	
Race/Hispanic origin	
Hispanic nativity	
Home internet access	2018 CPS March Supplement
Region x Metropolitan status	
Volunteerism	2017 CPS Volunteering and Civic Life Supplement
Voter registration	2016 CPS Voting and Registration Supplement
Party affiliation	Average of the three most recent Pew Research Center telephone surveys.

Note: Estimates from the ACS are based on non-institutionalized adults. Voter registration is calculated using procedures from Hur, Achen (2013) and rescaled to include the total US adult population.

PEW RESEARCH CENTER

Group	Unweighted sample size	Plus or minus ...
Total sample	4,272	1.9 percentage points
Form 1	2,140	2.6 percentage points
Form 2	2,132	2.6 percentage points
Men	1,875	2.9 percentage points
Women	2,397	2.4 percentage points
White, Non-Hispanic	2,887	2.2 percentage points
Black, Non-Hispanic	445	5.8 percentage points
Hispanic	611	5.5 percentage points
Ages 18-29	671	4.8 percentage points
30-49	1,314	3.3 percentage points
50-64	1,308	3.4 percentage points
65+	977	3.8 percentage points

---

HS or less	1,483	3.3 percentage points
Some college	1,182	3.4 percentage points
College+	1,600	2.9 percentage points
Less than \$30,000	1,107	3.8 percentage points
\$30,000-\$74,999	1,469	3.2 percentage points
\$75,000+	1,496	3.0 percentage points
Rep/Lean Rep	1,823	2.8 percentage points
Dem/Lean Dem	2,296	2.6 percentage points

---

Sample sizes and sampling errors for other subgroups are available upon request.

© Pew Research Center, 2019

## Topline questionnaire

**2019 PEW RESEARCH CENTER'S AMERICAN TRENDS PANEL**  
**WAVE 49 JUNE 2019**  
**FINAL TOPLINE**  
**JUNE 3-17, 2019**  
**TOTAL N=4,272**

**THE QUESTIONS PRESENTED BELOW ARE PART OF A LARGER SURVEY CONDUCTED ON THE AMERICAN TRENDS PANEL. OTHER QUESTIONS ON THIS SURVEY HAVE EITHER BEEN PREVIOUSLY RELEASED OR HELD FOR FUTURE RELEASE.**

**ASK ALL:**

SECUR1 Compared with five years ago, do you feel your personal information is...  
**[REVERSE ORDER OF OPTIONS 1 AND 2 FOR HALF OF RESPONDENTS]**

June 3-17,

2019

6	More secure
70	Less secure
24	About the same
*	No Answer

**ASK FORM 1 [N=2,140]:**

PRIVACYOPENa In your own words, what does "privacy" mean to you?

June 3-17,

2019

28	Other people and organizations not being able to access their possessions or private life
26	Control over information, possessions, self; deciding what's accessible to others
15	Themselves, their personal information and possessions, the desire to keep things to themselves
4	Having their information sold, third party involvement
3	General security references, i.e. "secure," "guarded," "protective"
2	Tracking, surveillance, monitoring, spying
2	Privacy is a myth/means nothing/doesn't exist
2	Crime, hacking, fraud, any threats of illicit activity
2	Threat from the government regarding themselves, possessions or private life
1	Personal information is only accessible with the person's knowledge or consent
*	Spam, unwanted calls or solicitations
4	Other
17	Did not answer

**ASK FORM 2 [N=2,132]:**

PRIVACYOPENb In your own words, what does "digital privacy" mean to you?

June 3-17,

2019

17	Themselves, their personal information and possessions, the desire to keep things to themselves
14	Control over information, possessions, self; deciding what's accessible to others
13	Other people and organizations not being able to access their possessions or private life
9	Privacy is a myth/means nothing/doesn't exist
6	Having their information sold, third party involvement
5	Crime, hacking, fraud, any threats of illicit activity
4	General security references, i.e. "secure," "guarded," "protective"
3	Tracking, surveillance, monitoring, spying
2	Company measures, how websites/companies should secure data, terms of service, privacy settings
2	Personal information is only accessible with the person's knowledge or consent
1	Threat from the government regarding themselves, possessions or private life
4	Other
31	Did not answer

Threat from the government regarding themselves, possessions or private life

**ASK ALL:**

PRIVACYNEWS1            How closely, if at all, do you follow news about privacy issues?

June 3-17,  
2019

11	Very closely
46	Somewhat closely
33	Not too closely
10	Not at all closely
*	No Answer

**ASK FORM 1 [N=2,140]:**

**[RANDOMIZE ORDER OF TRACKCO1a AND TRACKCO1b]**

TRACKCO1a            As far as you know, how much of what you do ONLINE or on your cellphone is being tracked by advertisers, technology firms or other companies?  
**[RANDOMIZE]**

June 3-17,  
2019

41	All or almost all of it
31	Most of it
19	Some of it
4	Very little of it
4	None of it
1	No Answer

**ASK FORM 1 [N=2,140]:**

TRACKCO1b            As far as you know, how much of what you do OFFLINE – like where you are or who you are talking to – is being tracked by advertisers, technology firms or other companies? **[RANDOMIZE]**

June 3-17, 2019	
12	All or almost all of it
19	Most of it
38	Some of it
20	Very little of it
11	None of it
*	No Answer

**ASK FORM 1 [N=2,140]:**  
**[RANDOMIZE ORDER OF CONCERNCO AND BENEFITCO]**

CONCERNCO      How concerned are you, if at all, about how companies are using the data they collect about you?

June 3-17, 2019	
36	Very concerned
43	Somewhat concerned
17	Not too concerned
4	Not at all concerned
*	No Answer

**ASK FORM 1 [N=2,140]:**

BENEFITCO      How much do you feel you personally benefit from the data that companies collect about you?

June 3-17, 2019	
5	A great deal
23	Some
49	Very little
23	None
*	No Answer

**ASK FORM 1 [N=2,140]:**

CONTROLCO      How much control do you think you have over the data that companies collect about you?

June 3-17, 2019	
3	A great deal of control
15	Some control
51	Very little control
30	No control
*	No Answer

**ASK FORM 1 [N=2,140]:**

UNDERSTANDCO      How much do you feel you understand what companies are doing with the data they collect about you?

June 3-17,  
2019

6	A great deal
34	Some
48	Very little
11	Nothing
1	No Answer

**ASK FORM 1 [N=2,140]:**

POSNEGCO      On balance, which would you say most accurately describes how you feel?  
[RANDOMIZE]

June 3-17,  
2019

17	The benefits I get from companies collecting data about me outweigh the potential risks
81	The potential risks of companies collecting data about me outweigh the benefits I get
2	No Answer

**ASK FORM 1 [N=2,140]:**

ANONYMOUS1CO      Do you think it is possible to go about daily life today without having companies collect data about you?

June 3-17,  
2019

38	Yes, it is possible
62	No, it is not possible
*	No Answer

**ASK FORM 2 [N=2,132]:****[RANDOMIZE ORDER OF TRACKGOV1a AND TRACKGOV1b]**

TRACKGOV1a As far as you know, how much of what you do ONLINE or on your cellphone is being tracked by the government?

June 3-17,  
2019

24	All or almost all of it
23	Most of it
30	Some of it
14	Very little of it
9	None of it
*	No answer

**ASK FORM 2 [N=2,132]:**

TRACKGOV1b As far as you know, how much of what you do OFFLINE – like where you are or who you are talking to – is being tracked by the government?

June 3-17,  
2019

11	All or almost all of it
13	Most of it
33	Some of it
27	Very little of it
16	None of it
*	No answer

**ASK FORM 2 [N=2,132]:****[RANDOMIZE ORDER OF CONCERNGOV AND BENEFITGOV]**

CONCERNGOV How concerned are you, if at all, about how the government is using the data it collects about you?

June 3-17,  
2019

25	Very concerned
39	Somewhat concerned
26	Not too concerned
10	Not at all concerned
*	No Answer

**ASK FORM 2 [N=2,132]:**

BENEFITGOV How much do you feel you personally benefit from the data the government collects about you?

June 3-17,  
2019

4	A great deal
19	Some
42	Very little
34	None
1	No Answer

**ASK FORM 2 [N=2,132]:**

CONTROLGOV      How much control do you think you have over the data the government collects about you?

June 3-17,  
2019

4	A great deal of control
12	Some control
41	Very little control
43	No control
*	No Answer

**ASK FORM 2 [N=2,132]:**

UNDERSTANDGOV      How much do you feel you understand what the government is doing with the data they collect about you?

June 3-17,  
2019

4	A great deal
17	Some
53	Very little
25	Nothing
*	No Answer

**ASK FORM 2 [N=2,132]:**

POSNEGOV      On balance, which would you say most accurately describes how you feel?  
**[RANDOMIZE]**

June 3-17,  
2019

31	The benefits the government can provide by collecting data about me and others outweigh the potential risks
66	The potential risks of the government collecting data about me and others outweigh the benefits it can provide
4	No Answer

**ASK FORM 2 [N=2,132]:**

ANONYMOUS1GOV      Do you think it is possible to go about daily life today without having the government collect data about you?

June 3-17,  
2019

36	Yes, it is possible
63	No, it is not possible
1	No Answer

**ASK ALL:****[RANDOMIZE ORDER OF QUESTIONS A-F]**

CONCERNGRP

Now thinking about specific people or groups who might have access to your personal information... How concerned are you, if at all, about how much personal information the following people or groups might know about you?

	<u>Concerned a lot</u>	<u>Concerned a little</u>	<u>Not concerned</u>	<u>No Answer</u>
a. <b>[FORM 1 [N=2,140]]</b> Law enforcement agencies June 3-17, 2019	26	36	39	*
b. <b>[FORM 1 [N=2,140]]</b> Advertisers June 3-17, 2019	39	44	16	*
c. <b>[FORM 1 AND EMPLOYED [N=1,313]]</b> Your employer June 3-17, 2019	19	39	42	1
d. <b>[FORM 2 [N=2,132]]</b> The companies you buy things from June 3-17, 2019	30	50	20	*
e. <b>[FORM 2 [N=2,132]]</b> Your friends and family June 3-17, 2019	9	34	57	*
f. <b>[FORM 2 AND SOCIAL MEDIA USER [N=1,778]]</b> The social media sites you use June 3-17, 2019	40	46	14	*

**ASK ALL:****[RANDOMIZE ORDER OF QUESTIONS A-F]**

CONTROLGRP

Now thinking about specific types of information that different entities might want to know about you... How much control, if any, do you think you have over who can access the following types of information about you?

	<u>A lot of control</u>	<u>A little control</u>	<u>No control</u>	<u>No Answer</u>
a. <b>[FORM 1 AND SOCIAL MEDIA USER [N=1,800]]</b> Your posts and activities on social media June 3-17, 2019	16	50	35	*
b. <b>[FORM 1 [N=2,140]]</b> The search terms you use online June 3-17, 2019	9	39	48	*
c. <b>[FORM 1 [N=2,140]]</b> The purchases you've made, either online or in person June 3-17, 2019	12	43	45	*

d.	<b>[FORM 2 [N=2,132]]</b> Your physical location				
	June 3-17, 2019	18	54	28	1
e.	<b>[FORM 2 [N=2,132]]</b> The websites you visit				
	June 3-17, 2019	10	44	41	*
f.	<b>[FORM 2 [N=2,132]]</b> The private conversations you've had online or using text messaging				
	June 3-17, 2019	13	49	37	*

**ASK ALL:**

PP1 How often are you asked to agree to the terms and conditions of a company's privacy policy?

June 3-17, 2019	
25	Almost daily
32	About once a week
24	About once a month
15	Less frequently
3	Never
*	No answer

**ASK IF EVER ASKED TO AGREE TO PRIVACY POLICY (PP1=1-4) [N=4,170]:**

PP2 When you are asked to agree to a company's privacy policy, how often do you read it before agreeing to it?

June 3-17, 2019	
9	Always
14	Often
39	Sometimes
37	Never
1	No answer

**ASK IF READ PRIVACY POLICIES BEFORE AGREEING (PP2=1,2,3) [N=2,571]:**

PP3 When you read a privacy policy, what do you typically do? **[REVERSE ORDER OF RESPONSE OPTIONS FOR ½ OF RESPONDENTS]**

June 3-17, 2019	
22	Read it all the way through
35	Read it part of the way through
43	Glance over it without reading it closely
*	No answer

**ASK IF EVER READS PRIVACY POLICIES (PP2=1,2,3) [N=2,571]:**

PP4 How much do you typically understand the privacy policies you read?

June 3-17,  
2019  
13 A great deal  
55 Some  
29 Very little  
3 Not at all  
\* No Answer

**ASK ALL:****[RANDOMIZE ORDER OF QUESTION A-E]**

PP5

How confident are you, if at all, that companies will do the following things?

	<u>Very confident</u>	<u>Somewhat confident</u>	<u>Not too confident</u>	<u>Not confident at all</u>	<u>No Answer</u>
a. Follow what their privacy policies say they will do with your personal information June 3-17, 2019	5	37	40	17	1
b. Promptly notify you if your personal data has been misused or compromised June 3-17, 2019	5	30	41	24	1
c. Publicly admit mistakes and take responsibility when they misuse or compromise their users' personal data June 3-17, 2019	3	18	46	32	*
d. Use your personal information in ways you will feel comfortable with June 3-17, 2019	4	27	47	22	1
e. Be held accountable by the government if they misuse or compromise your data June 3-17, 2019	4	21	43	32	*

**ASK ALL:****[RANDOMIZE ORDER OF QUESTIONS A-C]**

PP6

How comfortable are you, if at all, with companies using your personal data in the following ways?

<u>Very comfortable</u>	<u>Somewhat comfortable</u>	<u>Not too comfortable</u>	<u>Not comfortable at all</u>	<u>No Answer</u>
-------------------------	-----------------------------	----------------------------	-------------------------------	------------------

a.	To help improve their fraud prevention systems					
	June 3-17, 2019	10	47	29	13	1
b.	Sharing it with outside groups doing research that might help improve society					
	June 3-17, 2019	6	30	37	27	*
c.	To help them develop new products					
	June 3-17, 2019	8	42	31	18	*

**ASK ALL:**

PRIVACYREG

How much do you feel you understand the laws and regulations that are currently in place to protect your data privacy?

June 3-17,  
2019

3	A great deal
33	Some
49	Very little
14	Not at all
*	No Answer

**ASK FORM 1 [N=2,140]:**

GOVREGV1

How much government regulation of what companies can do with their customers' personal information do you think there should be? **[RANDOMIZE]**June 3-17,  
2019

75	More regulation
8	Less regulation
16	About the same amount
1	No Answer

**ASK FORM 2 [N=2,132]:**

GOVREGV2

Which of the following do you think would be a more effective way to safeguard people's personal information? **[RANDOMIZE]**June 3-17,  
2019

55	Better tools for allowing people to control their personal information themselves
44	Stronger laws governing what companies can and cannot do with people's personal information
1	No Answer

**ASK ALL:**  
PROFILE1

Today it is possible to take personal data about people from many different sources – such as their purchasing and credit histories, their online browsing or search behaviors, or their public voting records – and combine them together to create detailed profiles of people’s potential interests and characteristics. Companies and other organizations use these profiles to offer targeted advertisements or special deals, or to assess how risky people might be as customers.

Prior to today, how much had you heard or read about this concept?

June 3-17,	
2019	
27	A lot
50	A little
22	Nothing at all
1	No Answer

**ASK IF HAVE HEARD OF DATA PROFILES (PROFILE1=1-2) [N=3,361]:**

PROFILE2      How many companies do you think use these types of profiles to help understand their customers?

June 3-17,	
2019	
17	All of them
57	Most of them
18	Some of them
2	Only a few of them
4	Not sure
*	No Answer

**ASK IF HAVE HEARD OF DATA PROFILES (PROFILE1=1-2) [N=3,361]:**

PROFILE3      Do you ever see advertisements or solicitations that appear to be based on a profile that has been made of you using your personal data?

June 3-17,	
2019	
49	Yes, frequently
34	Yes, on occasion
9	No
7	Not sure
*	No Answer

**ASK IF EVER SEE ADS BASED ON PERSONAL DATA (PROFILE3=1,2) [N=2,816]:**

PROFILE4      How much, if at all, do you understand what data about you is being used to create these advertisements?

June 3-17,	
2019	
14	A great deal
50	Somewhat
31	Not too much
4	Not at all
*	No Answer

**ASK IF EVER SEE ADS BASED ON PERSONAL DATA (PROFILE3=1,2) [N=2,816]:**

PROFILE5 In general, how well do these advertisements accurately reflect your actual interests and characteristics?

June 3-17,  
2019

7	Very well
54	Somewhat well
33	Not too well
5	Not well at all
*	No Answer

**ASK ALL:****[RANDOMIZE ORDER OF QUESTIONS A-F]**

DATAUSE Now thinking about other ways that private companies and government agencies might use data or information they collect about people...

In your opinion, do you think the following uses of data or information are acceptable or unacceptable?

	<u>Acceptable</u>	<u>Unacceptable</u>	<u>Not sure</u>	<u>No Answer</u>
a. <b>[FORM 1 [N=2,140]]</b> The government collecting data about all Americans to assess who might be a potential terrorist threat June 3-17, 2019	49	31	19	*
b. <b>[FORM 1 [N=2,140]]</b> Poorly performing schools sharing data about their students with a nonprofit group seeking to help improve educational outcomes June 3-17, 2019	49	27	24	*
c. <b>[FORM 1 [N=2,140]]</b> DNA testing companies sharing their customers' genetic data with law enforcement agencies in order to help solve crimes June 3-17, 2019	48	33	18	1
d. <b>[FORM 2 [N=2,132]]</b> Makers of a fitness tracking app sharing their users' data with medical researchers seeking to better understand the link between exercise and heart disease June 3-17, 2019	41	35	22	1

e.	<b>[FORM 2 [N=2,132]]</b> A social media company monitoring its users' posts for signs of depression, so they can identify people who are at risk of self-harm and connect them to counseling services				
	June 3-17, 2019	27	45	27	1
f.	<b>[FORM 2 [N=2,132]]</b> Makers of smart speakers sharing audio recordings of their customers with law enforcement to help with criminal investigations				
	June 3-17, 2019	25	49	25	1

**ASK ALL:****[RANDOMIZE ORDER OF QUESTIONS A-C]**DB1 In the last 12 months, have you had someone... **[RANDOMIZE]**

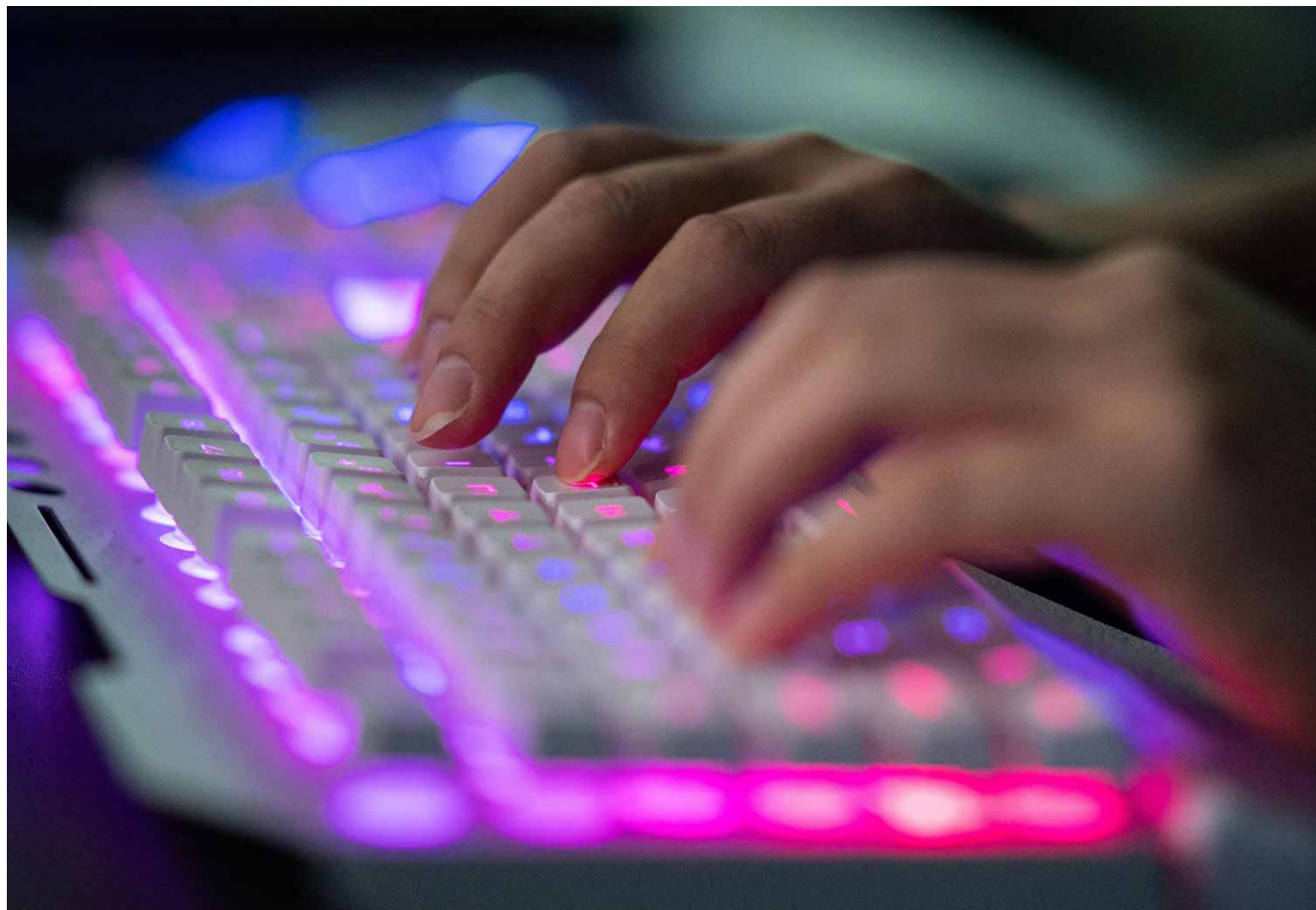
	<u>Yes</u>	<u>No</u>	<u>No Answer</u>
a. Put fraudulent charges on your debit or credit card			
June 3-17, 2019	21	78	1
b. Take over your social media or email account without your permission			
June 3-17, 2019	8	91	1
c. Attempt to open a line of credit or apply for a loan using your name			
June 3-17, 2019	6	93	1

# GALLUP®

MARCH 22, 2021

## Cyberterrorism Tops List of 11 Potential Threats to U.S.

BY MEGAN BRENNAN



STORY HIGHLIGHTS

- 82% of Americans say cyberterrorism is a "critical threat"
- Development of nuclear weapons in North Korea (77%), Iran (75%) rank next
- Partisans differ most on threat level of illegal immigrants, climate change

WASHINGTON, D.C. -- As the Biden administration continues to explore how it will respond to Russia's large-scale cyberattack against U.S. companies and federal agencies last year, 82% of Americans say cyberterrorism is a "critical threat" to the vital interests of the U.S. over the next decade.

While cyberterrorism ranks atop a list of 11 potential threats to the U.S., the development of nuclear weapons by North Korea and by Iran are not far behind, with 77% and 75% of U.S. adults, respectively, considering them to be critical threats. Four other matters are likewise viewed as critical threats by majorities in the U.S.: international terrorism (72%), the spread of infectious diseases throughout the world (72%), China's economic power (63%), and global warming or climate change (58%).

Forty-six percent of Americans view large numbers of immigrants trying to enter the U.S. as a critical threat to the country, although that measure was taken before the recent influx of immigrants, including many unaccompanied minors, attempting to enter the U.S at the southern border.

Americans' Views of Critical Threats to U.S. Vital Interests

I am going to read you a list of possible threats to the vital interests of the United States in the next 10 years. For each one, please tell me if you see this as a critical threat, an important but not critical threat, or not an important threat at all.

	Critical threat	Important, not critical	Not important
	%	%	%
Cyberterrorism, the use of computers to cause disruption or fear in society	82	16	2

Development of nuclear weapons by North Korea	77	21	2
Development of nuclear weapons by Iran	75	21	3
International terrorism	72	24	4
The spread of infectious diseases throughout the world	72	26	3
The economic power of China	63	30	7
Global warming or climate change	58	23	19
Large numbers of immigrants entering the U.S. illegally	46	35	19
The military power of Russia	44	46	9
The conflict between the Israelis and the Palestinians	32	54	12
The conflict between China and Taiwan	30	53	16

GALLUP, FEB. 3-18, 2021

These findings are from Gallup's annual World Affairs survey, which was conducted Feb. 3-18, after President Joe Biden spoke with Russian President Vladimir Putin and made it clear "that the United States will act firmly in defense of its national interests in response to actions by Russia that harm us or our allies."

While the Biden administration has not yet taken any overt action to address the development of North Korea's nuclear weapons, it has been highly focused on Iran. The survey's field period ended just as the Biden administration attempted to begin talks to revive the Iran nuclear deal. The following week, in his first military action as president, Biden ordered airstrikes in Syria targeting Iran-backed militias, after a U.S. service member and coalition troops were wounded in a rocket attack. Biden said the retaliatory airstrikes were intended to make it clear that while the U.S. was interested in pursuing a nuclear deal with Iran, it would not allow the country to "act with impunity."

Gallup first gauged the public's views of various potential threats to the U.S. in 2004 and then periodically between 2010 and 2019. For the most part, current assessments of threat levels are mostly unchanged compared with readings from the past few years. However, several of this year's findings are particularly notable:

- The 63% of Americans who say China's economic power is a critical threat marks a new high and an increase from 46% in 2019. This comes as Americans now perceive China as the greatest enemy of the U.S.
- After hitting a high point in 2019, assessments of Russia's military power have moderated, with 44% now saying it is a critical threat and 46% important but not critical. In 2019, 52% characterized it as a critical and 39% an important threat.
- Americans' perceived threat level for the spread of infectious diseases throughout the world, at 72%, is nine percentage points higher than the prior reading, in 2016, reflecting the effect of the global coronavirus pandemic that continues to ravage the world.

## Partisans' Perceptions of Potential Threats

Majorities across party lines agree that six of the 11 potential threats are critical to the United States' interests. Roughly equal percentages of Republicans and Republican-leaning independents, as well as Democrats and Democratic-leaning independents, think three of them are critical threats: **cyberterrorism**, the **development of nuclear weapons by North Korea** and **international terrorism**.

Meanwhile, although majorities agree each is critical, partisans view the other three threats differently. Republicans are more likely than Democrats to think the **development of nuclear weapons by Iran** and the **economic power of China** are critical threats. The opposite is true of the **global spread of infectious diseases**. These differences are largely rooted in the stances of Donald Trump when he was president. Trump withdrew the U.S. from the Iran nuclear deal and reinstated sanctions against the country, raised tariffs and imposed sanctions on China, and downplayed the danger of the coronavirus.

Although fewer than half of each party group agree that **Russia's military power**, the **conflict between China and Taiwan**, and the **Israeli-Palestinian conflict** are critical threats, their views differ somewhat. Democrats are more likely than Republicans to think Russia's military power is a critical threat, while the opposite is true of the conflict between China and Taiwan. Views of the threat level of the Israeli-Palestinian conflict are similar by party.

Partisans have sharply different views of the threat levels of two other issues: **illegal immigration** and **global warming**. Republicans are more than three times as likely as Democrats to say large numbers of immigrants entering the U.S. illegally is a critical threat. At the same time, Democrats are more than three times as likely as Republicans to consider **climate change** or **global warming** to be a critical threat.

### Partisan Differences in Views of Critical Threats to the U.S.

Percentage who see each of these potential threats as a critical threat to the vital interests of the United States

	Republicans/ Leaners	Democrats/ Leaners	Gap between Republicans and Democrats
	%	%	pct. pts.
<b>Majorities in each party</b>			
Economic power of China	78	52	+26
Iran's development of nuclear weapons	83	68	+15
N. Korea's development of nuclear weapons	77	76	+1
International terrorism	72	72	0
Cyberterrorism	81	82	-1
Spread of infectious diseases in the world	61	82	-21
<b>Democratic majority only</b>			
Global warming or climate change	27	86	-59
<b>Republican majority only</b>			
Large numbers of immigrants illegally entering U.S.	75	20	+55
<b>Less than majorities in each party</b>			
Conflict between China and Taiwan	36	23	+13
Conflict between Israelis and Palestinians	35	30	+5
Military power of Russia	39	49	-10

GALLUP, FEB. 3-18, 2021

## Bottom Line

The events of the past two years have affected Americans' perceptions regarding the type of threat that a number of issues and situations pose to the vital interests of the U.S. Recent hacks by Russia and China have kept cyberterrorism atop the list of 11 potential threats, and continued

tensions with North Korea and Iran over their nuclear weapons aspirations have kept these among the top perceived threats. The coronavirus pandemic has heightened the view that the spread of infectious diseases worldwide is critical. With Biden bringing a new perspective to many issues, this could influence Americans' future views of threat levels.

*[View complete question responses and trends \(PDF download\).](#)*

*Learn more about how the [Gallup Poll Social Series](#) works.*

---

#### SURVEY METHODS



Results for this Gallup poll are based on telephone interviews conducted Feb. 3-18, 2021, with a random sample of 1,021 adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia. For results based on the total sample of national adults, the margin of sampling error is  $\pm 4$  percentage points at the 95% confidence level. All reported margins of sampling error include computed design effects for weighting.

Each sample of national adults includes a minimum quota of 70% cellphone respondents and 30% landline respondents, with additional minimum quotas by time zone within region. Landline and cellular telephone numbers are selected using random-digit-dial methods.

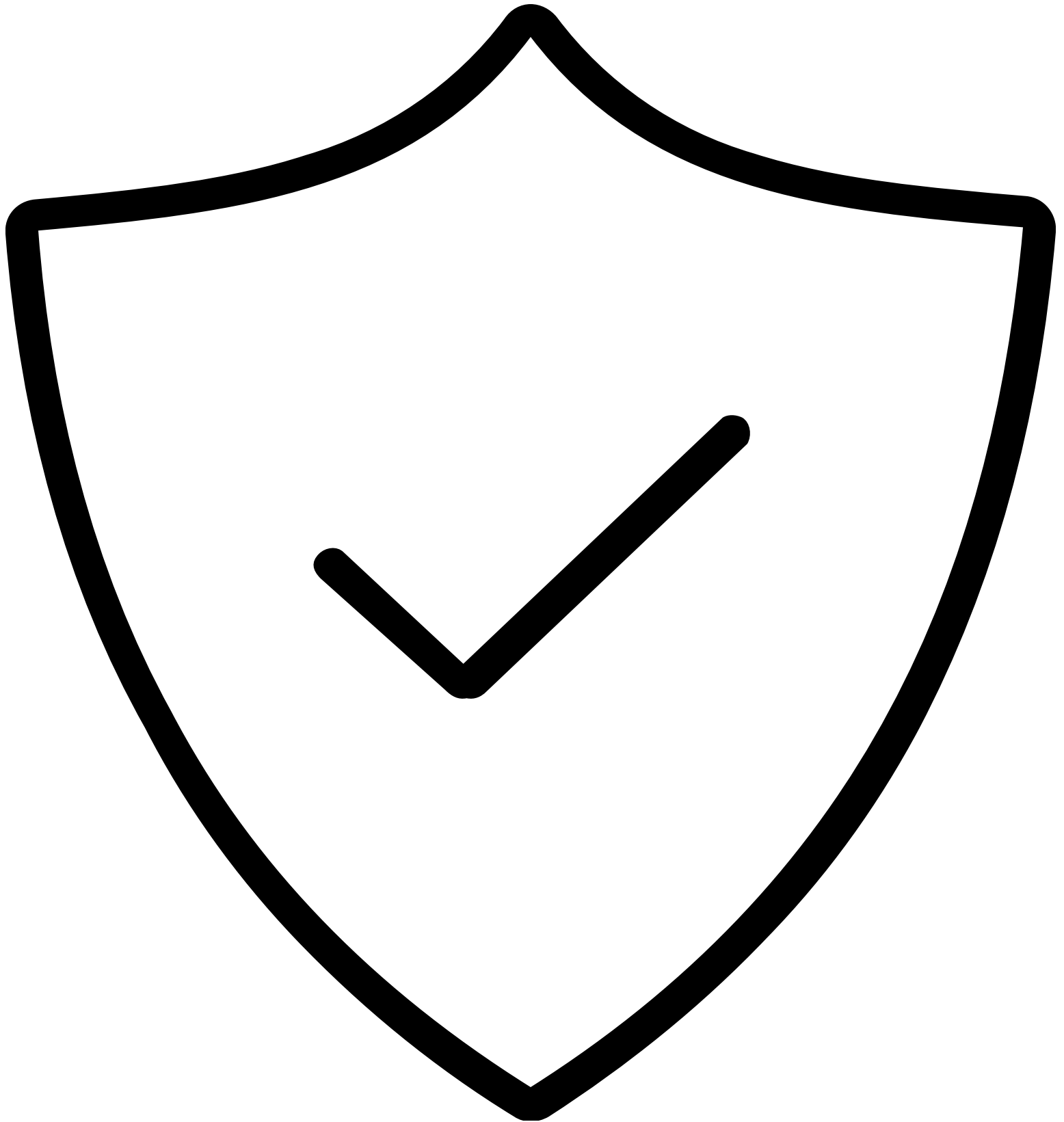
RELEASE DATE: March 22, 2021

SOURCE: Gallup <https://news.gallup.com/poll/339974/cyberterrorism-tops-list-potential-threats.aspx>

CONTACT: Gallup World Headquarters, 901 F Street, Washington, D.C., 20001, U.S.A

+1 202.715.3030

Copyright © 2022 Gallup, Inc. All rights reserved.



[Cookie Settings](#)

Gallup uses cookies to ensure the best website experience. Please select the cookies you want. You can change this setting anytime, but doing so may impair functionality on our websites. [Privacy Statement](#)

Gallup uses cookies to ensure the best website experience. Please select the cookies you want. You can change this setting anytime, but doing so may impair functionality on our websites. [Privacy Statement](#)

Please select the cookies you want for the best website experience.

[Adjust your cookie settings.](#)

☒ **Essential** We use essential cookies to provide our visitors basic functions through our websites. Without these cookies, our websites will not work properly.

☐ **Analytics** We use statistics cookies to collect information anonymously. This information helps us understand how our visitors use our websites.

☐ **Marketing** Marketing cookies help Gallup improve the ads we display on third-party websites and allow third parties to gather web-usage information required to determine ad performance.

Save Preferences

Accept All

Back

Hide

Show

Close

Gallup uses Cookies to ensure the best website experience. Continuing without changing Cookie settings assumes you consent to our use of cookies on this device. You can change this setting at any time, but that may impair functionality on our websites.

Gallup recently updated our policies. By continuing to use Gallup websites, you are agreeing to the revised terms.

- [Privacy Statement](#)
- [Site Terms of Use and Sale](#)
- [Product Terms of Use](#)
- [Adjust your cookie settings.](#)



# Lawmakers blast federal agencies over 5G standoff

BY KARL EVERS-HILLSTROM - 02/03/22 04:42 PM EST

6 SHARES

SHARE

TWEET

## Just In...

**America is free, but China has begun censoring our films**

OPINION — 9M 25S AGO

**Pence criticizes Biden's pledge to nominate Black woman to Supreme Court**

ADMINISTRATION — 21M 20S AGO

**NYPD honors Frank Serpico 50 years after blowing whistle on department corruption**

STATE WATCH — 24M 24S AGO

**NGOs petition Biden administration to stop buying single-use plastics**

EQUILIBRIUM/SUSTAINABILITY — 37M 6S AGO

**Ohio State sex abuse survivors appeal judge's dismissal of lawsuits**

CHANGING AMERICA — 38M 22S AGO

**Late to the climate fight, Houston aims to change the strategy and slow the pace**

OPINION — 38M 25S AGO

**Satellite images discover massive methane leaks from gas pipelines**



© Greg Nash

Lawmakers went after federal agencies on Thursday over the tumultuous rollout of 5G technology earlier this year, accusing officials of creating a crisis by failing to communicate over aviation safety concerns.

Members of the House aviation subcommittee questioned the head of the Federal Aviation Administration (FAA) along with airline and wireless executives about the lead-up to the 5G standoff, which resulted in delayed rollout of the technology in January.

Rep. Peter DeFazio (D-Ore.), chairman of the House Transportation and Infrastructure Committee, criticized the Federal Communications Commission (FCC) for approving the sale of C-band spectrum to telecoms last year without taking input from FAA officials who have been warning of potential disruptions as far back as 2015.

"It's a pattern of ignoring consequences beyond the consequences to the profitability of the telecom industry, that's their only focus," DeFazio said of the FCC, whose chairwoman Jessica Rosenworcel was invited to the hearing but did not attend, citing a scheduling conflict.

"Having a dropped call is way less serious than having a dropped airline

CHANGING AMERICA  
— 38M 31S AGO

Trump, Jordan spoke for 10 minutes morning of Jan. 6 attack

HOUSE — 47M 37S AGO

VIEW ALL

Related News by |

Former host Gretchen Carlson slams Fox...

White House confirms Judge J. Michelle...

Wondering What Slows Down Your Mac?  
Sponsored | MacKeeper

CNN's Tapper defends Doocy after outburst...

out of the sky,” DeFazio added.

Committee members and airline officials said the situation is still not resolved and urged regulators to develop a permanent solution that allows for 5G to be widely instituted without risking passenger safety.

Airlines and FAA officials have warned that 5G C-Band can interfere with some airplanes’ radio altimeters that depict how far a plane is off the ground. The FAA grounded certain planes just before 5G was activated last month and has since approved 90 percent of commercial aircraft for low-visibility landings at airports with 5G.

Lawmakers questioned why the FCC and FAA failed to coordinate in the years leading up to 5G deployment.

Rep. Garret Graves (R-La.), the aviation subcommittee’s ranking member, blasted agencies for “playing chicken with each other,” calling the interagency standoff “embarrassing, ridiculous and inexcusable.”

FAA Administrator Steve Dickson told lawmakers that the FCC was slow to deliver data about how 5G C-Band interacts with airplane instruments.

“As it turns out, the FCC didn’t even have the data that we needed,” Dickson said. “We discovered that when we started to work directly with the telecommunications companies. They never had to provide this to the government.”

Dickson said that the FAA is working to develop new standards that will require airlines to upgrade or replace older airplane instruments that are disrupted by 5G signals.

Last month, airlines warned that 5G deployment would force large numbers of airplanes to be grounded for safety reasons, potentially causing widespread delays and cancellations. At the last minute, wireless companies agreed to delay the deployment of 5G towers near certain airports for six months and share more data about their towers, a move that officials say prevented a full-blown crisis but should have been done much earlier.

Hillicon Valley — Presented by Cisco — App store market power bill...  
On The Money — January jobs report may show net job losses

Airline officials testified Thursday that new restrictions need to be placed on nearby 5G towers before they go online and noted that 5G-related FAA restrictions are causing disruptions, particularly for smaller, regional airports.

Faye Malarkey Black, president of the Regional Airline Association, told lawmakers that FAA exemptions have gone mostly to larger airplanes, and restrictions still apply to aircraft that make more than 130,000 monthly flights and are the only source of air service to 27 airports.

“Not knowing longterm what aircraft can fly where and under what conditions is a serious problem for an industry that requires certainty for

scheduling and planning,” said Cathryn Stephens, airport director of Oregon’s Eugene Airport.

**TAGS** **FEDERAL AVIATION ADMINISTRATION** **JESSICA ROSENWORCEL** **PETER DEFAZIO**  
**GARRET GRAVES** **FAA** **FCC** **AIRLINES** **5G**

SHARE

TWEET



**THE HILL 1625 K STREET, NW SUITE 900 WASHINGTON DC 20006 | 202-628-8500 TEL | 202-628-8503 FAX**  
**THE CONTENTS OF THIS SITE ARE © 1998 - 2022 NEXSTAR MEDIA INC. | ALL RIGHTS RESERVED.**

SUBSCRIBE TO PUSH NOTIFICATIONS

Do Not Sell My Data

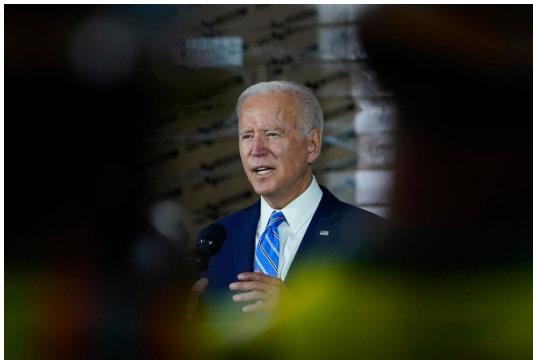
This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers visit <https://www.djreprints.com>.

<https://www.wsj.com/articles/havana-syndrome-victims-to-get-u-s-support-under-new-law-11633717099>

POLITICS | NATIONAL SECURITY

# Havana Syndrome Victims to Receive Financial Support Under New Law

Biden signs measure to compensate U.S. diplomats, spies and others hit with mysterious neurological affliction



President Biden said, 'Addressing these incidents has been a top priority for my administration.'

PHOTO: SUSAN WALSH/ASSOCIATED PRESS

By [Warren P. Strobel](#)

Updated Oct. 8, 2021 3:39 pm ET

WASHINGTON—President Biden on Friday signed a law providing financial support for U.S. government personnel who have suffered the mysterious neurological attacks known as Havana Syndrome, a step victims describe as a milestone in their yearslong quest for recognition and medical treatment.

Roughly 200 U.S. diplomats, intelligence officers, military officers and others have been struck in locations ranging from Europe and the Western Hemisphere to China. Symptoms include severe headaches, fatigue, memory loss and cognitive difficulties. U.S. intelligence agencies are still struggling to determine who is behind the attacks, which were first reported in Havana five years ago, and which weapon or mechanism is behind them.

The law Mr. Biden signed, the Helping American Victims Afflicted by Neurological Attacks (HAVANA) Act, enables the director of the Central Intelligence Agency, the secretary of State and other agency heads to provide financial compensation to individuals affected by the incidents. Many say they have shouldered significant out-of-pocket medical costs.

“Civil servants, intelligence officers, diplomats and military personnel all around the world have been affected by anomalous health incidents,” Mr. Biden said in a statement, using the U.S. government’s term for the attacks. “Some are struggling with debilitating brain injuries that have curtailed their careers of service to our nation. Addressing these incidents has been a top priority for my administration.”

Sen. Susan Collins, the Maine Republican who helped write the legislation, said that with the law’s enactment, “Havana Syndrome victims will finally receive the financial assistance and medical support that they deserve.”

Mr. Biden’s signing of the law comes as senior administration officials say his administration has issued new guidance to government national security personnel, including at the White House National Security Council, on what to do if they suspect they are under attack. The guidance instructs individuals, if they feel the sudden onset of sound, heat or pressure to the head, to move away from the area.

A senior official described the guidance, first reported by McClatchy Newspapers, as part of a broader White House effort on the issue, which includes ensuring quicker medical attention for those affected, standardizing reporting and evaluation of cases across agencies, and aggressively investigating who and what is behind the incidents.

Attacks have been reported against U.S. officials serving overseas, and in some cases their families, in Austria, China, Colombia, Germany, Serbia and elsewhere. An official traveling with CIA Director William Burns in India in September reported symptoms, and Vice President Kamala Harris temporarily delayed her arrival in Hanoi in August, following reports of an incident there.

In December, a panel of the National Academies of Sciences, Engineering and Medicine said that the abrupt onset of symptoms was most consistent with “a directed radio frequency (RF) energy attack” rather than inadvertent or environmental exposure. But it also said that more research was needed, noting the illness was “unlike any disorder in the neurological or general medical literature.”

A senior CIA official said this week that U.S. intelligence agencies haven’t conclusively determined how the attacks are being conducted, nor who is responsible. “We’ve developed interesting leads, but nothing that causes us to come to any firm conclusions,” the official said.

Director of National Intelligence Avril Haines is overseeing a panel of intelligence analysts and outside scientific experts tasked with determining the mechanism used in the attack. The panel’s work is expected to conclude later this fall.

Former CIA and State Department officials said that until recently, their reports of symptoms weren’t taken seriously by agency leaders, which forced them to seek care on their own. Some have had to resign from government over the health issues.

“For too long, too many of us have been treated as adversaries and not partners by our own agencies,” said Robyn Garfield, a Commerce Department officer who was injured in Shanghai in 2018 and leads a Havana Syndrome victim advocacy group. “That needs to stop and we need to remain united to protect the workforce, determine the source of the attacks and also continue with our important work.”

#### Corrections & Amplifications

Havana Syndrome attacks have been reported in Colombia and other countries. A previous version of this article misspelled the name of the South American nation as Columbia. (Corrected on Oct. 8)

Write to Warren P. Strobel at [Warren.Strobel@wsj.com](mailto:Warren.Strobel@wsj.com)

Copyright © 2021 Dow Jones & Company, Inc. All Rights Reserved

This copy is for your personal, non-commercial use only. To order presentation-ready copies for distribution to your colleagues, clients or customers visit <https://www.djreprints.com>.

# 2019 Broadband Experience Index By Broadband Type

*Using Multiple, Measurable, Performance Criteria  
To Compare The Real-World Consumer Experience  
By Type Of Broadband*

Michael C. Render, RVA LLC  
**October 1, 2019**



## TABLE OF CONTENTS

BACKGROUND NEED .....	3
DETERMINING MEASUREMENT ATTRIBUTES .....	3
METHODOLOGY INNOVATION .....	4
RVA CONSUMER STUDY METHODOLOGY .....	5
BROADBAND EXPERIENCE INDEX METHODOLOGY .....	6
2019 RAW FINDINGS .....	7
2019 NORMALIZED FINDINGS .....	8
2019 BROADBAND EXPERIENCE INDEX .....	9
ALTERNATIVE CALCULATIONS.....	10
NOTES FOR FUTURE STUDIES.....	10

## BACKGROUND NEED

One of the most significant needs that retail consumers, network operators, consultants, and government policy officials have when considering and evaluating Internet or “broadband” is a simple and reliable way to compare quality and performance across the various delivery options. The current Internet delivery options include DSL, Cable modem, Wireless, Satellite, and Fiber-to-the-Home service.

Many have observed that a measure of comparative performance should not be based only on one single specification, noting that a single attribute could not possibly capture the full picture of performance difference. Unfortunately, using a single measure is quite common today - broadband comparisons, especially for consumers, are often based only on advertised download speeds.

Realizing this deficiency, the Fiber Broadband Association (FBA) and RVA LLC have both had the goal of determining a method to more fairly and completely compare broadband types. (The Federal Communication Commission or FCC has also been pursuing a similar goal.)

## DETERMINING MEASUREMENT ATTRIBUTES

Criteria for broadband measurement was developed based on the experience of past RVA consumer Internet studies.

While much of the industry only focuses on download speeds, consumers have indicated several factors that are important to measuring broadband:

### Reliability

Reliability refers to the stability of the system – broadband being available when needed, with a minimum number of user interventions (rebooting modems or calling customer service) required.

Reliability has been shown in several past RVA studies to be the single most important predictor of overall broadband satisfaction. The importance of reliability was determined both by directly asking consumers how important individual broadband attributes were to their broadband overall, and by utilizing multiple regression analysis to independently model which attributes had the most influence on their satisfaction.

## Bandwidth

Bandwidth, which is the amount of data that can be transmitted in a fixed amount of time, influences the speed at which applications can load as well as the quality of communications. Bandwidth can be thought of as the size of a pipe.

Based on consumer rankings, bandwidth is the second most important broadband attribute. Multiple regression analysis shows that upload speeds currently influence satisfaction more than download speeds - perhaps because upload speeds are, on average, most constrained at present.

## Latency

Latency defines the time it takes an individual packet of information to travel from one point to another. Latency can be thought of as the speed of flow within a pipe.

Latency can affect quality communication. An obvious example of latency is the delay seen in real-time TV satellite feeds from across the world. Latency becomes especially important in some Internet consumer applications – such as gaming competitions or stock market day-trading. It is certainly important in background security and transportation monitoring applications.

# METHODOLOGY INNOVATION

To help accomplish the goal of a more comprehensive and reliable broadband comparison methodology, RVA LLC has, over the past several years, honed online surveying methods to better measure broadband in its real-world application. This effort utilized multiple performance and attitudinal criteria. (It should be noted that determining attitudes about various broadband aspects in a survey is relatively standard and straight-forward, but determining performance measures via a survey instrument is more complex.)

To conduct meaningful performance measurement, RVA first developed ways to indirectly measure broadband reliability – primarily by asking consumers to recall the number of times they needed to reboot their modems monthly and call customer service annually.

RVA also implemented direct measurement of broadband speeds within the survey process by asking respondents to take and record a speed test (via a provided industry recognized speed test link).

More recently, RVA developed a process to automatically conduct and record speed test results during a survey without respondent interaction, thus saving time, increasing completion rates for the question, and, most importantly, increasing accuracy (eliminating transcription errors, etc.). This year, RVA has added automatic latency tests to the surveying methodology.

## RVA CONSUMER STUDY METHODOLOGY

Raw data for determining the Broadband Experience Index was pulled from a May 2019 national RVA Consumer Broadband Study of online panelists. The random study gathered 2,053 U.S. responses. (There were over 2,500 responses when including Canada.)

One of the ways the consumer study differentiated users was by the method of final Internet delivery to the home: Fiber-to-the-home (FTTH) via fiber optic cable; Cable via coaxial cable; DSL or Fiber-to-the-node (FTTN) via copper wire; Wireless via radio waves; and Satellite via signals from geostationary satellites. (The wireless segment included those who utilized either fixed or mobile wireless for Internet service at home.)

Following the RVA random study of home broadband users, satellite Internet users were oversampled in order to obtain an additional 145 responses, thus bringing the total satellite sample to 158 and the total overall U.S. consumer sample to 2,198.

Where possible in the survey, actual measurements were taken of data relative to the broadband attributes. In addition, respondents were asked about their satisfaction with these attributes from their provider.

RVA survey data measures end-to-end performance, which can include the influence of backbone Internet and in-home Wi-Fi performance. These factors could penalize higher performing broadband methods, such as FTTH and cable, more than lower performing methods. (An example would be older Wi-Fi systems limiting the download bandwidth measured from high bandwidth “gigabit” users.)

One additional note: many providers of a given broadband method generally offer several speed tiers with different price points. The 2019 RVA Consumer Study did not test individual tiers, such as what experience the highest speed tier for each method provided. The study measured the average of what random consumers subscribed to for each method (which is related to what each method can provide at a reasonable price point).

## BROADBAND EXPERIENCE INDEX METHODOLOGY

The Broadband Experience Index uses four components: 1) Performance measurements from the 2019 RVA Consumer Broadband Study; 2) The latest FCC Operator performance measurements (from the 2017 FCC “Measuring Broadband America” report); 3) Attitudinal measurements from the 2019 RVA Consumer Study; and 4) a Net Promoter Score Index calculated from the 2019 RVA Consumer Study raw data.

The “Net Promoter Score” is a fairly common indicator of overall relative satisfaction and the likelihood of recommending a product or service to a friend. The score is determined by asking customers to rate on a 10-point scale how likely they would be to recommend their product or service. “Promoters” are designated as those who indicate “very likely to recommend” (a “9” or “10” rating). “Detractors” are designated as those who only give a “1”-“6” rating to this question. The score is then determined by subtracting detractors from promoters. (Generally, net promoter scores for the telecom and communication industry are fairly low overall and are often negative.)

All raw data used in the Index is listed on the next chart, followed by a chart showing the normalized data, i.e. data converted to a common range for comparison (method to be described later).

Finally, the data from the four Index components was averaged to determine an overall Broadband Experience Index for each broadband delivery method. (It should be noted that no weighting was given to the various broadband attributes when calculating the Index.)

Results follow:

## 2019 RAW FINDINGS

Raw data from the study was cross tabulated by broadband delivery method to review relative performance data. Differences in all the performance and attitudinal measures (speed, latency and reliability) are evident in the data.

<b>2019 Broadband Experience Index: RAW DATA</b>					
<b>By Type Of Broadband</b>					
	Best =			Worst=	
	FTTH	Cable	Wireless	DSL/FTTN	Satellite
<b>RVA PERFORMANCE MEASUREMENTS 2019</b>					
Average Download Speed (Mbps)	119	108	24	22	9
Average Upload Speed (Mbps)	40	14	7	6	1
Average Latency (Milliseconds)	34	66	241	387	2281
Average Reliability (# monthly reboots and annual calls)	1.4	1.9	2.0	2.4	2.3
<b>FCC PERFORMANCE MEASUREMENTS 2017</b>					
Average Download Speed (Mbps)	73	97	na	17	16
Average Upload Speed (Mbps)	82	10	na	2	3
Average Latency (Milliseconds)	17	27	na	44	585
Reliability (No measurement)	na	na	na	na	na
<b>RVA ATTITUDINAL MEASUREMENTS 2019</b>					
Very Satisfied Download Speed	49%	40%	31%	36%	16%
Very Satisfied Upload Speed	49%	37%	32%	35%	16%
Very Satisfied Latency (No measurement)	na	na	na	na	na
Very Satisfied Reliability	51%	42%	40%	40%	23%
<b>RVA NET PROMOTER SCORE 2019</b>					
Net Promoter Score (NPS)	5%	-5%	-11%	-9%	-16%
<b>SAMPLE SIZE FOR MOST MEASURES</b>					
	363	879	261	378	158

Notes Regarding Differences in RVA Data to FCC Data:

- 2017 FCC data primarily measured Tier 1 providers serving urban and suburban areas. 2019 RVA data was a random sample of consumers using providers of all sizes, including those serving rural areas.
- 2017 FCC data may have used more optimized satellite receiver setups. 2019 RVA data is based on a random sample of actual satellite users, some likely with line-of-sight tree obstructions, slightly misaligned antennas, etc.

Note Regarding Latency

- Latency for wireless and DSL is particularly influenced by outliers – some cases where latency is extremely high. High latency for satellite is somewhat more consistent – primarily because signals must travel back and forth to a geostationary satellite located over 22,000 miles above the earth.

## 2019 NORMALIZED FINDINGS

In order to review multiple data points with different value ranges, all data was converted to percentiles, with the highest rating for any given attribute set at 100% and the lowest rating for any given attribute set at 0%. Thus, 100% represents “best in class” for a particular attribute, while 0% represents the “lowest in class”. In addition, all data was converted directionally, so that a high score would always be better (i.e. low latency and low reboots and service calls are better, of course in raw terms, but these measures were inverted when converted for comparability.)

<b>2019 Broadband Experience Index: NORMALIZED SCORES</b>					
<b>By Type Of Broadband</b>					
	Best =				Worst=
	FTTH	Cable	Wireless	DSL/FTTN	Satellite
<b>RVA PERFORMANCE MEASUREMENTS 2019</b>					
Average Download Speed (Mbps)	100%	90%	14%	12%	0%
Average Upload Speed (Mbps)	100%	33%	15%	13%	0%
Average Latency (Milliseconds)	100%	99%	91%	85%	0%
Average Reliability (# monthly reboots and annual calls)	100%	55%	40%	0%	10%
<b>SUBTOTAL</b>	100%	69%	40%	27%	3%
<b>FCC PERFORMANCE MEASUREMENTS 2017</b>					
Average Download Speed (Mbps)	70%	100%	na	1%	0%
Average Upload Speed (Mbps)	100%	10%	na	0%	1%
Average Latency (Milliseconds)	100%	98%	na	95%	0%
Reliability (No measurement)	na	na	na	na	na
<b>SUBTOTAL</b>	90%	69%	na	32%	0%
<b>RVA ATTITUDINAL MEASUREMENTS 2019</b>					
Very Satisfied Download Speed	100%	73%	45%	61%	0%
Very Satisfied Upload Speed	100%	64%	48%	58%	0%
Very Satisfied Latency (No measurement)	na	na	na	na	na
Very Satisfied Reliability	100%	68%	61%	61%	0%
<b>SUBTOTAL</b>	100%	68%	52%	60%	0%
<b>Net Promoter Score (NPS)</b>					
	100%	52%	24%	33%	0%
<b>SUBTOTAL:</b>	100%	52%	24%	33%	0%
<b>2019 BROADBAND EXPERIENCE RATING</b>					
	98%	65%	38%	38%	1%

## 2019 BROADBAND EXPERIENCE INDEX

Averaging all the four measurement subtotals from the normalized percentile scores, without weighting – RVA 2019 Internet performance measurements, FCC 2017 Internet performance measurements, RVA 2019 Internet attitudinal measurements, and RVA 2019 Internet net promoter score - provides an overall 2019 Broadband Experience Index.

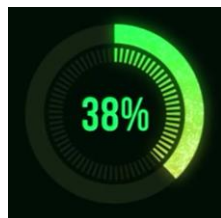
At present, Fiber is clearly providing the “best in class” consumer broadband experience, while Satellite is providing the lowest consumer broadband experience.



Fiber



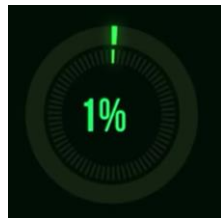
Cable



Wireless



DSL



Satellite

## ALTERNATIVE CALCULATIONS

The 2019 Broadband Experience Index normalizes the data using a range based on the current best data measurement for any attribute versus the current lowest data measurement for any attribute.

Another possible approach would be to use a range based on the current best data measurement for any attribute versus a zero score for any attribute. Using this calculation approach, the Alternative 2019 Broadband Experience Index would be as follows:

	FTTH	Cable	Wireless	DSL/FTTN	Satellite
<b>2019 ALTERNATIVE BEI RATING</b>	99%	69%	47%	45%	14%

## NOTES FOR FUTURE STUDIES

The Broadband Experience Index could be expanded in the future as new methods of delivering broadband come into play. As an example, wireless may be divided into fixed and mobile wireless, especially as new wireless methods using millimeter wave frequencies become more commonly used.

The satellite category could be separated into two types: geosynchronous and non-geosynchronous lower orbit satellite delivery.

It is important to note that this is the first iteration of the Broadband Experience Index. Some evolution of methodology will likely occur over time. RVA and the Fiber Broadband Association certainly welcome any comments and suggestions regarding the Broadband Experience Index.



# Myth Buster:

## Fiber vs. Fixed Wireless Access



Fiber is the holy grail for broadband connectivity, but some lawmakers believe that its too expensive and look to cheaper options to close the growing digital divide. To help dispel this myth, the Fiber Broadband Association performed a cost analysis to compare the total cost of ownership and address some common misconceptions.

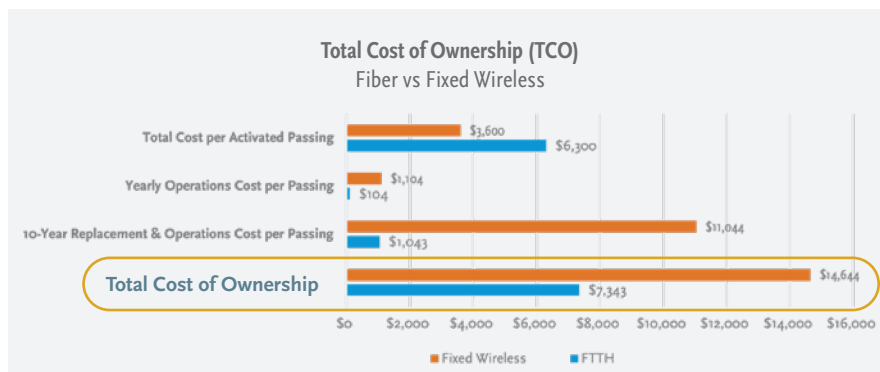
### Why Fiber?

An optical fiber provides a noise-free environment for information to flow at the speed of light, providing nearly limitless bandwidth and capacity and low latency (no delay) to subscribers. When fiber is deployed as critical infrastructure, communities see immediate benefits:

- Gigabit broadband speeds and beyond
- Significant Economic Impact
- Jobs, economic diversification, education, healthcare
- Smart Grid modernization – 43% reduction in power outages<sup>1</sup>
- Path to 5G (requires robust fiber infrastructure)

### Fiber Costs Less In The Long Term<sup>2</sup>

The initial deployment cost for fiber is more expensive than Fixed Wireless (FWA) but the Total Cost of Ownership (TCO) demonstrates that fiber ends up being half the cost of FWA over time.



### Fiber Delivers Gigabit Speeds Without Dependencies<sup>3</sup>

The FCC has awarded RDOF funding for FWA networks that promise to deliver 1Gbps/500Mbps speeds, but that performance can only be achieved under the following conditions:

Wireless networks designed based on mid-band spectrum cannot reliably provide RDOF Gigabit-Level Services.



The only band that would have enough capacity to accommodate even just a small handful of Gigabit users would be the 5 & 6 GHz unlicensed bands.



When using these bands, the wireless provider is not protected from interference from other wireless users and devices such as common home Wi-Fi routers.

Wireless networks designed based on millimeter wave (mmW) technologies can only satisfy Gigabit service if:



All customers are within 500 feet of their specific serving tower/antenna.



All customers have clear line-of-sight to the serving tower/antenna.



The capacity of the serving tower/antenna must be adequate to accommodate the downstream and upstream capacities of all users served by that antenna or tower.



Each antenna and/or sector has adequate backhaul capacity with a reasonable oversubscription ratio such as 4:1\*.



A congestion evaluation is performed.

<sup>1</sup> Chattanooga Economic Impact Study – Professor Bento Lobo UT-Chattanooga

<sup>2</sup> Fiber Broadband Association

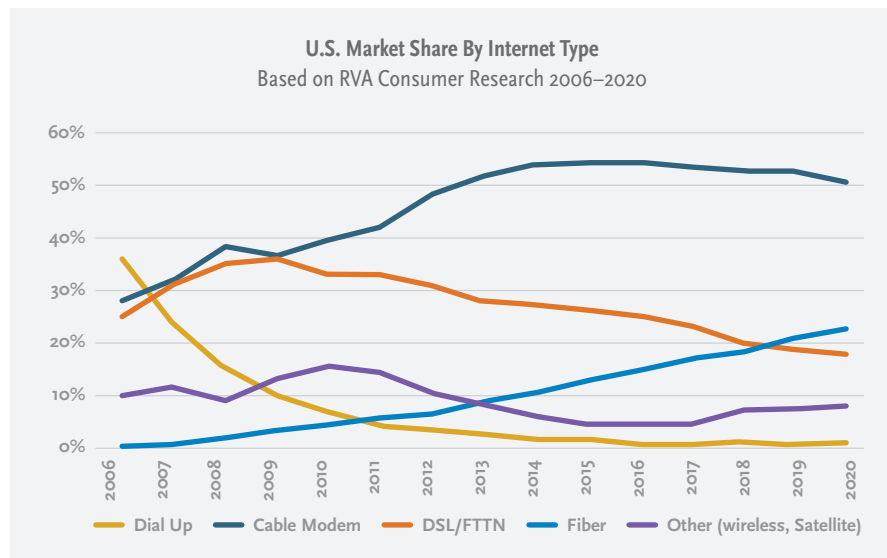
<sup>3</sup> Larry Thompson, Vantage Point – FCC Filing

\* In most instances this will require the towers/antennas to be served with a fiber network

## Fixed Wireless Cost Doesn't Stop at Installation

Not only do fixed wireless networks include installation of several components that come at a cost, they are not environmentally friendly and require upgrading and ongoing maintenance. The typical lifespan of fixed wireless networks is approximately 5-8 years.

While the initial cost may be higher, the overall cost of using fiber is lower than fixed wireless access. Once installed, fiber cables require little (if any) maintenance as they immediately provide the promised speeds and resistant to corrosion, making their connection much more reliable. This makes fiber a preferred option in areas where other wires may be exposed to elements and require replacement over time.



## State of the Market

Due to its favorable attributes, fiber continues to take share at the expense of other technologies. Consumers and communities increasingly understand the value of high performance, all-fiber networks and are demanding that service providers provide such access. By contrast, fixed wireless service serves a limited market.

The number of homes passed by all-fiber networks now exceeds 50.6 million; more than 22.5 million homes are connected to all-fiber networks for at least one service (Internet, television or telephone).

## In Summary

The table below summarizes the key differences between fiber and fixed wireless. While some fixed wireless networks can be implemented in less time, the broadband service itself is provided at significantly lower speeds and an overall lower lifecycle cost.

	FIBER	FIXED WIRELESS
<b>Broadband Data Speed</b>		
500 Mbps–10 Gbps	★★★★★	★
250 Mbps–100 Mbps	★★★★★	★★★
25 Mbps–100 Mbps	★★★★★	
<b>Latency</b>	★★★★★	★★★
<b>Reliability</b>	★★★★★	★★★★
<b>Resiliency</b>	★★★★	★★★
<b>Implementation</b>	★★★	★★★★
<b>Infrastructure Cost</b>		
Short Term	★★	★★★★★
Long Term	★★★★★	★★
<b>Life Cycle Costs</b>	★★★★★	★★

### Fiber

The turnkey design and construction costs of fiber including formulation and engineering, attachment fees and completion is typically between \$8 to \$25 per foot for aerial fiber and \$12 to \$50 per foot buried.

### Fixed Wireless Access

The capital cost to construct and fully install a single antenna site with multi-sectored equipment on an existing structure in a fixed wireless system requires a capital investment in the range of \$100k-300k.

Excluding the cost of constructing the towers/antenna structures

CI00187



See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/224240247>

# Energy Consumption in Wired and Wireless Access Networks

Article in IEEE Communications Magazine · July 2011

DOI: 10.1109/MCOM.2011.5783987 · Source: IEEE Xplore

CITATIONS

162

READS

3,678

4 authors, including:



**Robert Ayre**

University of Melbourne

41 PUBLICATIONS 2,359 CITATIONS

[SEE PROFILE](#)



**Kerry Hinton**

University of Melbourne

127 PUBLICATIONS 3,684 CITATIONS

[SEE PROFILE](#)



**Rodney Stuart Tucker**

University of Melbourne

356 PUBLICATIONS 11,619 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Energy modelling of access and core networks with a view to forecasting energy consumption trends. [View project](#)



Green Communications [View project](#)

# Energy Consumption in Wired and Wireless Access Networks

Jayant Baliga, University of Melbourne and National ICT Australia

Robert Ayre, Kerry Hinton, and Rodney S. Tucker, University of Melbourne

## ABSTRACT

Energy consumption is becoming an increasingly important issue throughout the community. For network operators in particular it is a concern as networks expand to deliver increasing traffic levels to increasing numbers of customers. The majority of the energy used by the Internet today is consumed in the access network, and this will continue to be the case for the short-to-mid-term future. Access technologies should thus be a prime focus for energy use mitigation. In this article, we present a detailed analysis of energy consumption in current and future access networks. We present the energy consumption of DSL, HFC networks, passive optical networks, fiber to the node, point-to-point optical systems, UMTS (W-CDMA), and WiMAX. Optical access networks are the most energy efficient of the available access technologies.

## INTRODUCTION

The Internet has revolutionized the way in which we seek and disseminate information, transact business, educate, and entertain. Traffic growth on the consumer Internet has been high and sustained, with growing numbers of Internet customers using increasingly sophisticated applications, and using them more often. The rollout of broadband access networks has both facilitated and been driven by these increasing demands. Service providers and network operators have invested heavily in deploying and upgrading these new access networks, investing as well in large data centers and expanding core network capacity. In general, these investment decisions have been driven by the traditional design metrics of capital cost, operational cost, and capacity requirements. Energy usage has always been considered, but in the context of operational cost rather than as an issue in its own right. In today's world, the traditional network design metrics alone are no longer sustainable, and energy needs to become one of the principal design parameters for future networks and equipment.

It has been estimated that the IT industry today is responsible for a total of 2 percent of the electrical energy consumed in a typical Orga-

nization for Economic Cooperation and Development (OECD) country [1]. Within this total, the energy used in the switching, transmission, and access networks delivering the consumer Internet today has been estimated to be approximately 0.5 percent of typical national consumption, with a rising trend as customer traffic levels increase [2, 3]. Moreover, in the short- to medium-term future, the majority of the total network energy will be consumed in the access network.

This article reviews the range of access network technologies that might be used as network operators move to deliver higher-speed customer access, with a special focus on energy usage as average customer data rates increase [4]. Wise technology choices for future access networks will be an important first step in helping our industry to meet its challenges in a more energy-constrained future [5]. We focus here on the energy consumption of digital subscriber line (DSL), hybrid fiber coaxial (HFC) networks, passive optical networks (PONs), fiber to the node (FTTN), point-to-point optical (PtP) systems, WiMAX, and Universal Mobile Telecommunications System (UMTS) using wideband code-division multiple access (W-CDMA). We find that optical access networks are the most energy efficient of the available access technologies.

## POWER CONSUMPTION MODEL

In this section we describe an energy model of the access network, and consider the energy consumption of a number of wired and wireless access technologies. There are several different access technologies in use today, and more are in development [4]. Figure 1 is a schematic diagram of the seven access network technologies we consider here. These technologies include DSL and HFC networks as well as a number of high-speed access technologies: PON, FTTN, PtP, WiMAX, and UMTS. In Fig. 1, thin lines indicate optical links while thick lines indicate copper links.

The energy consumption of each access network can be split into three components: the energy consumption in the customer premises equipment (i.e., the modem), the remote node

*This work was supported by the Australian Research Council and by Cisco Systems.*

or base station (base transceiver station, BTS), and the terminal unit (which is located in the local exchange/central office). The per-customer power consumption  $P_a$  of all seven access technologies in Fig. 1 can be expressed in the form

$$P_a = P_{CPE} + \frac{P_{RN}}{N_{RN}} + \frac{1.5P_{TU}}{N_{TU}}, \quad (1)$$

where  $P_{CPE}$ ,  $P_{RN}$ , and  $P_{TU}$  are the powers consumed by the customer premises equipment, remote node or base station (if there is one), and terminal unit, respectively.  $N_{RN}$  and  $N_{TU}$  are the number of customers or subscribers that share a remote node and the number of customers that share a terminal unit, respectively. The last term on the right side of Eq. 1 includes a factor of 1.5 to account for additional overheads such as external power supplies, electricity distribution losses, and cooling requirements in the building that houses the terminal equipment [6, 7]. The equipment in the remote node and at the customer premises is cooled naturally by the surrounding environment.

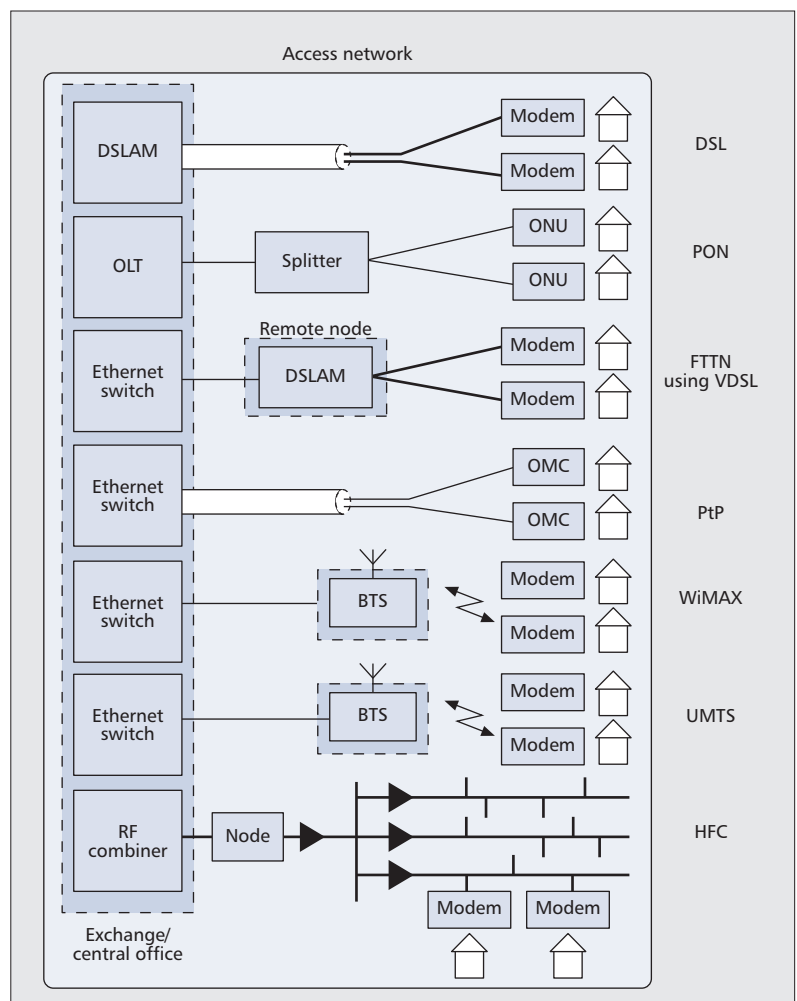
In this article, we estimate the energy consumption of a range of access technologies, based on representative data from manufacturers' data sheets for commercial equipment. Table 1 lists commercial equipment for each of the seven access networks. The equipment listed in Table 1 is not necessarily best in class for energy efficiency, but we believe it is representative of 2010-era access network equipment.

Table 2 lists representative values of the parameters in Eq. 1 for each of the access technologies considered here. The number of users per remote node and terminal unit for the two wireless technologies (WiMAX and UMTS) correspond to per-user capacities of 0.25 Mb/s. The number of users per remote node and terminal unit for the wired technologies correspond to configurations where the ports on the remote node equipment and terminal unit are fully occupied. In the following paragraphs we describe each access technology and explain the details of the parameters used in developing an energy model for each access technology.

### DIGITAL SUBSCRIBER LINE

DSL is provided through copper pairs originally installed to deliver a fixed-line telephone service [4]. A DSL modem at each customer home connects via a dedicated copper pair to a DSL access multiplexer (DSLAM) at the nearest central office (telephone exchange).

For the comparison presented here, we consider a modern ADSL2+ access service. This technology can in theory provide maximum speeds of 24 Mb/s downstream to a customer close to the central office and 1 Mb/s upstream. However, to account for the typical degradation in performance due to line length, line loss, crosstalk, and noise, we assume a maximum access rate of 15 Mb/s. We consider a typical DSLAM capable of serving 1008 customers, having a full-duplex switching capacity of 2 Gb/s, and consuming approximately 1.7 kW. The customer modem is modeled as consuming 5 W.



**Figure 1.** Schematic of network structure with access network options including digital subscriber line (DSL) and hybrid fiber coaxial (HFC) networks as well as a number of promising candidates for future high speed access technologies - passive optical network (PON), fiber to the node (FTTN), point-to-point optical (PtP), WiMAX and UMTS. Thin lines indicate optical links and thick lines indicate copper links.

### HYBRID FIBER COAXIAL NETWORK

Cable distribution networks were initially deployed to deliver television services, and today also deliver Internet and telephony services. Typically, the television program material is compiled from national and regional sources at a headend distribution center in each regional city. This material is distributed on radio frequency (RF) modulated optical carriers through optical fiber to local nodes, where the optical signal is converted into an electrical signal. That electrical signal is then distributed to customers through a tree network of coaxial cables, with electrical amplifiers placed as necessary in the network to maintain signal quality. Hence, these networks are commonly termed hybrid fiber coaxial networks.

The electrical signal sent toward the customer on the coaxial cable includes an array of modulated RF carriers representing the individual television channels, generally extending from either 50 or 65 MHz up to a frequency of 500–900 MHz, depending on the network. A reverse channel to the node or head-end is also provided in the band below 50 MHz. Broadband

Based on the neighborhood topology, the cable is branched, the signal re-amplified, and signals for individual customers tapped off along the route. We allow for four RF carriers to be assigned to convey data signals on each of these coaxial cable links, so that each cable tree supports a total of 152 Mb/s.

	Terminal unit	Remote node	Customer premises equipment
ADSL	Alcatel Stinger FS+	N/A	D-Link DSL502
HFC	Motorola GX2	Motorola SG4000 Quad Node Motorola BLE100 RF Amplifier	Motorola SB6120
PON	Hitachi 1220	N/A	Wave7 ONT-G1000i
FTTN	Hitachi 1220	NEC AM3160	NEC VF200F6
PtP	Cisco 4503	N/A	TC Communications TC3300
WiMAX	Cisco 4503	Motorola WAP 450 Series	Alvarion BreezeMAX USB 200 Zyxel MAX-200M1
UMTS	Cisco 4503	Motorola Horizon 3G-nx	Sierra Wireless AirCard USB 306

**Table 1.** Representative equipment used in model of access networks.

	$P_{TU}$ (kW)	$N_{TU}$	$P_{RN}$ (W)	$N_{RN}$	$P_{CPE}$ (W)	Technology limit	Per-user capacity
ADSL	1.7	1008	N/A	N/A	5	15 Mb/s	2 Mb/s
HFC	0.62	480	571	120	6.5	100 Mb/s	0.3 Mb/s
PON	1.34	1024	0	32	5	2.4 Gb/s	16 Mb/s
FTTN	0.47	1792	47	16	10	50 Mb/s	2 Mb/s
PtP	0.47	110	N/A	N/A	4	1 Gb/s	55 Mb/s
WiMAX	0.47	24400	1330	420	5	22 Mb/s	0.25 Mb/s
UMTS	0.47	15300	1500	264	2	20 Mb/s	0.25 Mb/s

**Table 2.** Values of access network parameters used.

Internet access is provided by using one or more of the downstream RF channels to deliver high-speed data, and one or more of the low-frequency reverse channels to send data from the customer into the network (upstream).

Each television customer has a set-top box, which demodulates the incoming signal for display on a television receiver. The data/Internet customer has a cable modem connected to his/her computer or network.

The topology of an HFC network is illustrated in more detail in Fig. 2. As before, thin lines indicate optical links while thick lines indicate copper links. In our model for Internet access via a HFC network, we include:

- “Head-end” equipment, where video RF carriers are combined in a broadband network platform (BNP) with data-supporting RF carriers onto transmission fibers
- Field-deployed node equipment, which converts the optical signals into electrical signals suitable for cable distribution
- A network of electrical RF amplifiers and splitters, so that each node can support a number of customers spread over many streets

- In each customer’s premises, a cable modem; Universal Broadband Routers (UBRs) are an essential part of the HFC data network, but in this analysis we focus on the energy consumption of the access network and do not include the energy consumption of UBRs in our calculations.

We model the network using current DOCSIS-based equipment, employing 6 MHz RF channels and 256-quadrature amplitude modulation (QAM) to deliver 38 Mb/s per RF channel. Each node in the cable network receives four sets of RF data carriers on separate fibers and the video program carriers on another fiber. These data carriers are combined with video program carriers and distributed on four lines of coaxial cables. Based on the neighborhood topology, the cable is branched, the signal re-amplified, and signals for individual customers tapped off along the route. We allow for four RF carriers to be assigned to convey data signals on each of these coaxial cable links, so each cable tree supports a total of 152 Mb/s.

In the final distribution network link, we allow 15 customers to be served from a single electrical line amplifier. When the offered

capacity per customer is low, the coaxial cable distribution network requires few nodes to support many customers and is highly branched; in such cases we allow one trunk amplifier to support up to eight line amplifiers. Each node requires at least one video and one data port on the BNP that combines the RF signals, and a number of RF data channels from the UBR. When modeling high data loads with low oversubscription, several UBRs may be required in a city.

The BNP consumes 620 W, while serving up to four nodes. The number of customers served by a node depends on the number of RF carriers available for data, in both downstream and upstream directions, and the per-customer traffic level. A quad node consumes 256 W; the trunk and line amplifiers each consume 35 W. In Table 2 the power consumption of the HFC remote node includes the power consumption of the node, trunk amplifier, and necessary electrical amplifiers in a typical installation.

The RF amplifiers, nodes, and head-end RF combining equipment in the HFC network are shared between data and broadcast television services; thus, the energy consumption of this equipment should be shared between the services. On the basis of the subscriber numbers for each service in one provider's network, we allocate 40 percent of energy consumption of this equipment to supporting Internet access.

We have dimensioned the network on the basis of downstream capacity delivered to customers. There are, however, many instances where the upstream capacity of the reverse channels may be limited by high ambient RF noise levels, and this limits the number of customers that can be served from a node and cable network tree. Thus, in assuming a network limited by download capacity, we offer a conservative (i.e., lower) power consumption estimate.

### PASSIVE OPTICAL NETWORK (PON)

Fiber to the premises installations most commonly use a PON technology, in which a single fiber from the network node feeds one or more clusters of customers through a passive splitter [4]. An optical line terminal (OLT) is located at the central office, and serves a number of access modems or optical network units (ONUs) located at each customer premises. Each customer ONU in a cluster connects via a fiber to the splitter, and from there shares the same fiber connection to the OLT. ONUs communicate with the OLT in a time multiplexed order, with the OLT assigning time slots to each ONU based on its relative demand.

The number of customers that share a connection to an OLT is generally 32 or 64. For the network energy model, we consider a gigabit PON (GPON) access network, providing asymmetric 2.4 Gb/s downstream, 1.2 Gb/s upstream from the ONU to the OLT and 32 customers sharing a connection to an OLT. The OLT equipment shelf is capable of supporting 32 GPON lines (1024 customers), has a backhaul capacity of 16 Gb/s, and draws 1.34 kW. The splitter is unpowered. The ONU is a basic model providing only data connectivity, and draws 5 W.

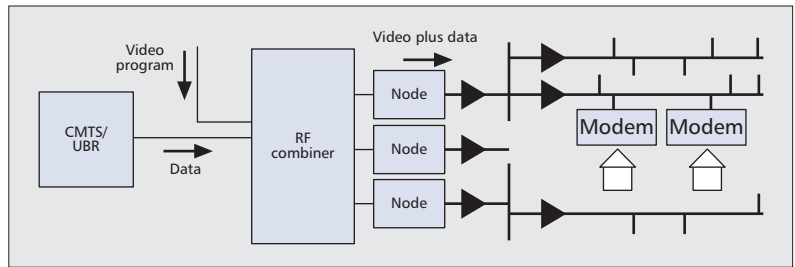


Figure 2. Layout of an HFC network.

### FIBER TO THE NODE USING VDSL

Fiber-to-the-node (FTTN) technology makes use of existing copper pairs [4]. Dedicated fiber is provided from a network switch to a DSLAM in a street cabinet close to a cluster of customers, and high-speed copper pair cable technologies such as very-high-speed DSL (VDSL) or ADSL2+ are used for the final feed to the customer premises. This accommodates the distance limitations of high-speed pair-cable technologies, and enables high-speed broadband service delivery without the cost of providing new cable entry to the customer premises.

In an FTTN network using VDSL, a remote node houses a VDSL DSLAM which communicates with several homes through the copper wire and connects back to an Ethernet switch in the central office/local exchange through a fiber link. A typical VDSL2 line card supports 16 customers and consumes approximately 42 W. An additional 5 W is consumed for an ONU to link the remote VDSL DSLAM to an OLT back in the central office. The VDSL2 customer modem consumes 10 W and has a peak access rate of 50 Mb/s. The Ethernet switch has 116 optical Gigabit Ethernet ports and 64 Gb/s of switching capacity, with a power consumption of 474 W. For the model, we dimension the fiber backhaul capacity to suit the customer traffic level, but set upper limits on number of customers per Ethernet switch at 1792, and the maximum number of DSLAMs per Ethernet switch at 112. The four remaining ports on the Ethernet switch are used to provide backhaul capacity.

### POINT-TO-POINT ACCESS OPTICAL NETWORK

The highest access speed is achieved using a dedicated fiber between each customer premises and the network terminal unit in a PtP configuration [4]. The customer premises employs an optical media converter (OMC) to convert between the electrical signal used inside the home and the optical signal used in the access network.

For typical central office equipment we consider an Ethernet switch providing 116 optical Gigabit Ethernet ports and 64 Gb/s of switching capacity, with a power consumption of 474 W. An OMC at each home converts between the electrical signal used in the home network to an optical signal for transmission over fiber, and consumes 4 W. In this architecture there is no remote node. Each Ethernet switch connects to 110 homes, with the six remaining ports used to provide backhaul capacity.

*Although the oversubscription rate applied by network providers is typically much higher for wireless access networks than for wired access networks, to facilitate a fair comparison we model the same across all access networks.*

## WiMAX

WiMAX is a high-speed wireless access technology. WiMAX was initially designed to provide fixed-point or nomadic wireless access services, but its design standards have since been amended to support full mobility. In our model, we focus on the use of WiMAX in a stationary setting, where each home uses an indoor modem to connect to a base station. The WiMAX base station is remotely located and uses fiber or point-to-point wireless backhauls to connect to the metropolitan and edge network. The area covered by a base station is referred to as a cell, and users in a cell share the total available bandwidth. Per-user bandwidth can be significantly increased by creating multiple sectors in a cell through the use of directional antennas. In a three-sector configuration, each antenna covers a 120° sector.

WiMAX provides access rates of up to 70 Mb/s under ideal conditions. However, typically in urban areas there is not a clear line of sight between the user and the base station, and the combination of reduced signal level and multipath interference limits access speeds to about 35 Mb/s at distances up to about 7 km, with degraded speeds at higher distances.

For the comparison in this article, we model the base station at the remote antenna site as using a point-to-point fiber link to communicate to an upstream Ethernet switch. For the base station we assume a dual-antenna multiple-input multiple-output (MIMO) system with three sectors and mast-mounted power amplifiers. Each sector is modeled as providing 35 Mb/s in total to all users in the sector, and the total base station consumption is 1330 W. The fixed point indoor customer premises unit may be a standalone modem or a USB key style modem. Standalone modems typically achieve higher throughputs than USB modems but also consume more power. We model the home modem as consuming an average of 5 W to account for the diversity of possible devices in a given coverage area.

At low average per-user traffic levels, all users within a cell coverage area will receive adequate service, subject to propagation conditions. At higher average per-user traffic levels, fewer users could be adequately served by each base station sector, and either more sectors or more base stations would be needed. This leads to a rapid increase in the equipment power consumption at higher traffic levels.

## UMTS

UMTS is a cellular mobile system that can provide high-speed broadband access capability. It includes radio access to a base station, and from there connections to the core networks for data and voice. For this model we adopt the more commonly used W-CDMA variant, and focus on the broadband data access component of the network. Users may connect to a base station through their mobile phone, USB modem, or standalone modem. The base station is often located remote from its network access controller, and uses fiber or point-to-

point wireless backhaul to connect to the controller. Through the radio network controller a mobile user can connect to other mobile phones, the public switched telephone network, or the Internet. As with WiMAX, capacity can be greatly increased through the use of multiple sectors.

The spectral efficiency of UMTS was greatly increased through the introduction of high-speed downlink packet access (HSDPA), high-speed uplink packet access (HSUPA), and, most recently, evolved high-speed packet access (HSPA+). HSPA+ allows for theoretical downlink speeds of 42 Mb/s and uplink speeds of 11 Mb/s. However, typically interference in urban areas limits downlink speeds to about 30 Mb/s and uplink speeds to about 6 Mb/s. For our energy consumption model, the base station connects via Ethernet to an upstream switch, and from there to the radio network controller. A typical outdoor base station consumes 1.5 kW and supports three sectors. Each sector has an average downlink throughput of 22 Mb/s. The user modem is a USB modem that consumes less than 2 W.

## OVERSUBSCRIPTION

We characterize the capacity available to each customer by the headline access rate advertised and sold to customers by the Internet service provider (ISP). However, backhaul networks connecting the access network to the metropolitan and edge networks are dimensioned by network operators to provide some lower worst-case minimum transmission rate to every customer, taking advantage of the bursty nature of customer Internet traffic. The ratio of the advertised access rate to this minimum per-user rate is referred to as the oversubscription rate. Although the oversubscription rate applied by network providers is typically much higher for wireless access networks than for wired access networks, to facilitate a fair comparison we model the same across all access networks. Note that as the use of the consumer Internet for streaming real-time services increases, high oversubscription ratios will become unsustainable.

We model each access network in terms of a headline access rate of  $A$  Mb/s per customer and an oversubscription rate  $M$ . During the busiest period of the day, the minimum capacity available to a customer is  $A/M$ , the per-user capacity. Statistical multiplexing typically occurs at the DSLAM in ADSL, at the OLT in PON and FTTN, at the UBR in HFC, at the small Ethernet switch in the case of PtP, and at the base station switch for WiMAX and UMTS.

## MARKET SHARE AND TAKE-UP RATE

In many markets, customers choose from a range of Internet access options; for example, customers may be able to choose between DSL, HFC and UMTS network providers. A network provider, when building an access network, estimates the percentage of households that will buy the service in the short to medium term, referred to as the take-up rate, but will also

install additional capacity to cater for future growth in take-up.

In markets with regulated competitive access to infrastructure such as pair cable, a similar but slightly different parameter is market share. Competing ISPs commonly install DSL equipment in the same area, and customers can purchase services from a number of infrastructure-based ISPs, each of which has slightly overprovisioned to cater for future growth.

We combine these factors into one parameter and refer to it as underutilization. The power consumption of current networking equipment does not typically scale with utilization [8]; therefore, underutilization decreases the energy efficiency of equipment. To accommodate underutilization, we increase the power consumption of all access network equipment, except the customer premises equipment, by 25 percent. This increase in power consumption corresponds to network equipment utilization of 80 percent.

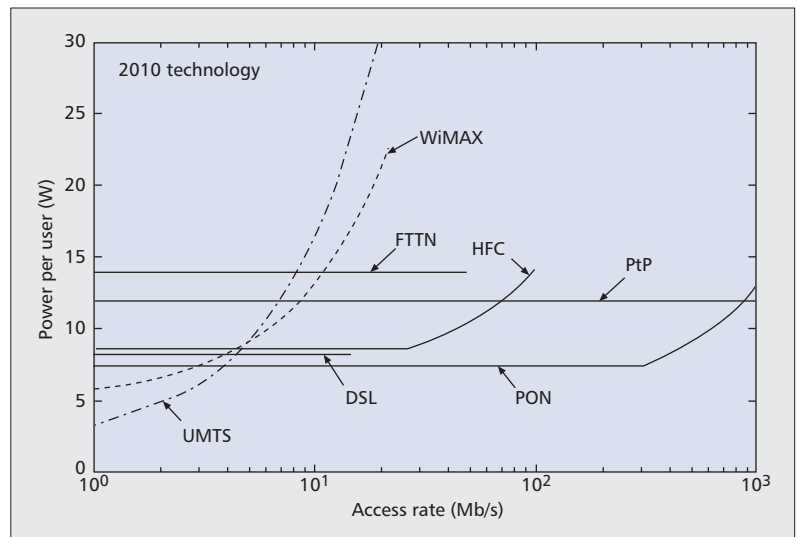
## ENERGY CONSUMPTION

We use the model described earlier to calculate the total per-customer power consumption for typical deployments of each of the seven access networks illustrated in Fig. 1. We also use the model to project the future energy consumption of these access networks. The power consumption of each of the access networks has been calculated for a range of “headline” access service rates, with a constant oversubscription factor of 20. That oversubscription figure is low in situations where customers predominantly use traditional web services such as email and browsing, but could be considered high for future scenarios which include mass use of real-time video on demand services.

For wired access technologies such as ADSL and VDSL, we assume that all customer access ports are fully occupied. For technologies with a shared access resource such as HFC, wireless, and PON, we again assume that all physical ports are utilized, but in addition we share the resource among as many customers as could be served at the particular average service rate and oversubscription factor. As service rates increase, fewer customers can be served, and more equipment (base stations, HFC nodes, PON linecards, etc.) must be provisioned, with an increase in the per-customer power consumption.

### POWER CONSUMPTION PER USER

Figure 3 is a plot of the per-customer power consumption of each access technology as a function of the headline access rate. Note here that this access rate is the provisioned per-user capacity multiplied by the oversubscription rate. The technology used in Fig. 3 for all access rates is the 2010-era technology described earlier. From Fig. 3, it is clear that at low access rates ( $< 1$  Mb/s) PON, DSL, and HFC have similar power consumption. At such rates, the overall power consumption is dominated by the consumption of the customer modem. In addition, the power consumption of current networking equipment does not typically scale with utiliza-



**Figure 3.** Power consumption of DSL, HFC, PON, FTTN, PtP, WiMAX, and UMTS as a function of access rate with an oversubscription rate of 20. The technology used is fixed at 2010 vintage for all access rates.

tion [8], resulting in very low efficiencies at low utilization. At an access rate of 1 Mb/s, all five wired access technologies are significantly underutilized. At these low rates, WiMAX and UMTS can flexibly share capacity among a very large number of users, and thus can achieve high efficiency and utilization. Increasing the access rate from 1 to 10 Mb/s increases the power consumption of WiMAX and UMTS by a factor of two and four, respectively, as fewer customers can use a given radio channel or base station and more resources must be provisioned to deliver the service. The power consumption of HFC services increases at a slower rate. At access rates greater than 10 Mb/s, wired access technologies are significantly more energy-efficient than wireless access technologies. HFC, DSL, and FTTN all reach technology limits in the 10–100 Mb/s range. For average service rates of a few to tens of megabits per second envisaged for mass customized streaming services such as high-definition video on demand, the PON has a clear energy advantage.

### COMPARISON OF POWER CONSUMPTION IN THE HOME AND THE NETWORK

In ADSL, HFC, PON, and FTTN the customer modem or ONU consumes over 65 percent of the total power in the access network. These units would normally operate continuously, but the power consumption of the access network could be significantly reduced through the use of automated sleep modes in customer premises network equipment [9]. Assuming the Internet is used on average 8 h/day, automated sleep modes in customer premises equipment could reduce the energy consumption of the access network by up to 40 percent. Additional savings in power consumption could be realized by fast/micro sleep modes, where customer premises equipment enters a sleep mode during periods of inactivity that are shorter than a second.

	Electronics	Optical interfaces	Power amplifiers	Power conversion
Modem (DSL/HFC)	70%	0%	10%	20%
RF amplifiers	0%	0%	80%	20%
Node (HFC)	0%	20%	60%	20%
BNP	20%	60%	0%	20%
ONU	70%	10%	0%	20%
OMC	50%	30%	0%	20%
Modem (WiMAX/UMTS)	60%	0%	40%	0%
BTS (WiMAX)	69%	0%	11%	20%
BTS (UMTS)	53%	0%	27%	20%

**Table 3.** Breakdown of power consumption.

## IMPROVEMENT IN ENERGY EFFICIENCY WITH TIME

Improvements in complementary metal oxide semiconductor (CMOS) and optical technology should lead to energy efficiency improvements in future generations of network equipment. For example, the energy efficiency improvement rate of Ethernet switches and OLTs is approximately 10 percent per annum [2, 10]. In this section we estimate the overall rate of improvement of each access network technology over time. To estimate this improvement rate we first break down the total power consumption of each item of network equipment into four subsystems: electronic, optical, power amplification, and AC/DC power conversion. We then apply standard estimates of improvement rates (given below) to these subsystems. We calculate the rate of improvement of each item of network equipment as the sum of the improvement rates of its subsystems, weighted by the proportion of total power consumed by that subsystem. This technique of estimating improvement rates is similar to the analysis performed in [10]. Table 3 lists estimates of the breakdown of total power consumption of each item of network equipment into these four subsystems. The per-annum “business as usual” improvement rates for these subsystems are:

- Electronics (26 percent)
- Optical interfaces (5 percent)
- Power conversion (0 percent)
- Power amplifiers (0 percent)

Figure 4 is a plot of the per-customer power consumption for each access technology as a function of time (bottom horizontal axis) and access rate (top horizontal axis). This plot is one scenario for future power consumption of each of the seven access network technologies, using the established “business as usual” efficiency improvement trends outlined in the previous paragraph. For this plot, the access rate is set at 5 Mb/s in 2010 and increases by 42 percent per

annum (double every two years), reaching 167 Mb/s in 2020. As before, the oversubscription rate is 20. Although some ISPs today advertise access rates of 100 Mb/s or more, the oversubscription rate used in those networks is typically much greater than 20. The power consumption curves for DSL, HFC, and FTTN cease prior to 2020 because we believe these technologies have a limited ability to scale and meet future increases in bandwidth requirements.

As shown in Fig. 4, we forecast that, if electronics and optics continue to improve at current rates, a lack of improvement in power amplifiers and power conversion subsystems will result in an overall diminishing rate of improvement in all access technologies. The power consumption of HFC and UMTS falls by only 50 percent because the majority of power consumption in these access networks is in power amplifiers, which have limited scope to improve in the future. The results in Fig. 4 suggest that the per-user power consumption of most high-speed access technologies (PON, PtP, FTTN, and WiMAX) should fall by around 70 percent from 2010 to 2020. Wireless technologies will continue to consume at least 10 times more power than wired technologies when providing comparable access rates and traffic volumes. PON will continue to be the most energy-efficient access technology.

## CONCLUSION

We have presented a model of energy consumption of current and future access networks using published specifications of representative commercial equipment. We analyzed the energy consumption of DSL, HFC, PONs, FTTN, point-to-point optical systems, UMTS (W-CDMA), and WiMAX. Passive optical networks and point-to-point optical networks are the most energy-efficient access solutions at high access rates.

## ACKNOWLEDGEMENT

The authors gratefully acknowledge the valuable discussions with B. Gathercole of the University of Melbourne and thank him for his assistance with assembling the data for the energy consumption of wireless networks.

## REFERENCES

- [1] M. Webb *et al.*, “Smart 2020: Enabling the Low Carbon Economy in the Information Age,” London, 2008.
- [2] J. Baliga *et al.*, “Energy Consumption in Optical IP Networks,” *J. Lightwave Tech.*, vol. 27, no. 13, July 2009, pp. 2391–403.
- [3] R. S. Tucker *et al.*, “Evolution of WDM Optical IP Networks: A Cost and Energy Perspective,” *J. Lightwave Tech.*, vol. 27, no. 3, Feb. 2009, pp. 243–52.
- [4] P. Chancelou *et al.*, “Overview of the Optical Broadband Access Evolution: A Joint Article by Operators in the IST Network of Excellence E-Photon/One,” *IEEE Commun. Mag.*, vol. 44, Aug. 2006, pp. 29–35.
- [5] J. Baliga *et al.*, “Energy Consumption in Access Networks,” *Opt. Fiber Commun./National Fiber Optic Engineers Conf. (OFC)/NFOEC*, San Diego, CA, Feb. 2008.
- [6] U.S. Environmental Protection Agency, EPA Report on Server and Data Center Energy Efficiency, Aug. 2007.
- [7] J. Koomey *et al.*, “Network Electricity Use Associated with Wireless Personal Digital Assistants,” *ASCE J. Infrastructure Systems*, vol. 10, Aug. 2004, pp. 131–37.
- [8] L. Ceuppens, “Planning for Energy Efficiency — Networking in Numbers,” *OFC/NFOEC*, San Diego, CA, Mar. 2009.

- [9] M. Gupta, S. Grover, and S. Singh, "A Feasibility Study for Power Management in LAN Switches," *Int'l. Conf. Network Protocols*, Oct. 2004, pp. 361–71.
- [10] O. Tamm, C. Hermesmeyer, and A. M. Rush, "Eco-Sustainable System and Network Architectures for Future Transport Networks," *Bell Labs Tech. J.*, vol. 14, no. 4, Feb. 2010, pp. 311–27.

## BIOGRAPHIES

JAYANT BALIGA (jbaliga@ee.unimelb.edu.au) received his B.Sc. degree in computer science and B.E. degree in electrical and electronic engineering (with first class honors) in 2007 from the University of Melbourne, Australia. He is currently working toward a Ph.D. degree in electrical engineering at the same university. His research interests include energy consumption, optical network architectures, and wireless communications.

ROBERT W. A. AYRE received his B.Sc. degree in electronic engineering from George Washington University, Washington, DC, in 1967, and B.E. and M.Eng.Sc. degrees from Monash University, Melbourne, Australia, in 1970 and 1972, respectively. In 1972 he joined the Research Laboratories of Telstra Corporation, working in a number of roles primarily in the areas of optical transmission for core and access networks, and in broadband networking. In 2007 he joined the ARC Special Centre for Ultra-Broadband Networks (CUBIN) at the University of Melbourne, continuing work on networking and high-speed optical technologies.

KERRY HINTON received an Honors Bachelor of Engineering in 1978, an Honors Bachelor of Science in 1980, and a Master of Science degree in mathematical sciences in 1982, all from the University of Adelaide. He was awarded a Ph.D. in theoretical physics from the University of Newcastle Upon Tyne, United Kingdom, and a Diploma in industrial relations from the Newcastle Upon Tyne Polytechnic in 1984. In the same year he joined Telstra Research Laboratories (TRL), Victoria, Australia, and worked on analytical and numerical modeling of optical systems and components. His work has focused on optical communications devices and architectures, physical layer issues for automatically switched optical networks (ASONs), and monitoring in all-optical networks. He was also a laser safety expert within Telstra. In 2006 he joined the ARC Special Centre for Ultra-Broadband Information Networks, Australia, at the University of Melbourne, where he is undertaking research into the energy efficiency of the Internet and optical communications technologies.

RODNEY S. TUCKER [S'72, M'75, SM'85, F'90] received his B.E. degree in electrical engineering and Ph.D. degree from the University of Melbourne, Victoria, Australia, in 1969 and 1975, respectively. He is currently a Laureate Professor at the University of Melbourne, where he is director of the Institute for a Broadband-Enabled Society and the Centre for Energy-Efficient Telecommunications. He is a Fellow of

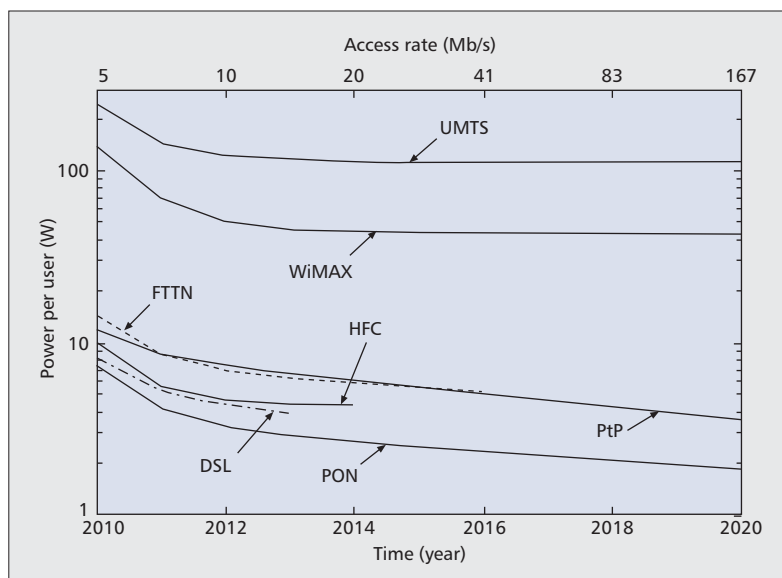


Figure 4. Expected power consumption of latest generation DSL, HFC, PON, FTTN, PtP, WiMAX and UMTS equipment as a function of the calendar year. The base access rate in 2010 is taken as 5 Mb/s.

the Australian Academy of Science, a Fellow of the Australian Academy of Technological Sciences and Engineering, and a Fellow of the Optical Society of America. In 1975 he was the recipient of a Harkness Fellowship by the Commonwealth Fund, New York. From 1988 to 1990 he was Editor-in-Chief of *IEEE Transactions on Microwave Theory and Techniques*. From 1991 to 1993, he was with the Management Committee of the Australian Telecommunications and Electronics Research Board, and a member of the Australasian Council on Quantum Electronics. From 1995 to 1999 and from 2009 the present, he is a member of the Board of Governors of the IEEE Lasers and Electrooptics Society. In 1995 he was the recipient of the Institution of Engineers, Australia, M. A. Sargent Medal for his contributions to electrical engineering and was named an IEEE Lasers and Electro-optics Society Distinguished Lecturer for the year 1995–1996. In 1997 he was the recipient of the Australia Prize, Australia's premier award for science and technology, for his contributions to telecommunications. From 1997 to 2006 he was an Associate Editor of *IEEE Photonics Technology Letters*. He is currently Vice-President, Publications of the IEEE Photonics Society. In 2007 he was the recipient of the IEEE Lasers and Electro-optics Society Aron Kressel Award for his pioneering contributions to high-speed semiconductor lasers.

Source: <https://www.statista.com/statistics/290525/cyber-crime-biggest-online-data-breaches-worldwide/>

## Cyber crime: biggest online data breaches as of 2021

Published by [Joseph Johnson](#) , May 25, 2021

One of the largest reported data leaks as of January 2020 was the early 2018 security breach of India's national ID database Aadhaar, with over 1.1 billion records lost. This included biometric information such as iris and fingerprint scans which could be used to open bank accounts and receive financial aid, among other government services. Two years prior to this a 2014 hack of online platform Yahoo was uncovered, affecting at least 500 million users accounts. In December 2016, the company revealed another hack dating back to 2013, which affected 1 billion user records. The impact of the second reported Yahoo hack was updated in October 2017, when the company revealed that 3 billion accounts had in fact been affected, making it one of the largest data breaches of this type to date.

### Cyber-crime - the dark side of digitalization

As the world continues its journey into the digital age, corporations and governments across the globe have been increasing their reliance on technology to collect, analyze and store personal data. This in turn has led to a rise in the number of cyber-crimes ranging from minor breaches to global-scale attacks impacting billions of users – such as in the case of Yahoo. Within the U.S. alone, [1506 data breaches were reported in 2019](#). This was a marked increase from the 498 cases reported a decade prior. Meanwhile, an all-time high of 471 million personal records were exposed through cyber-crime in 2018 nationwide.

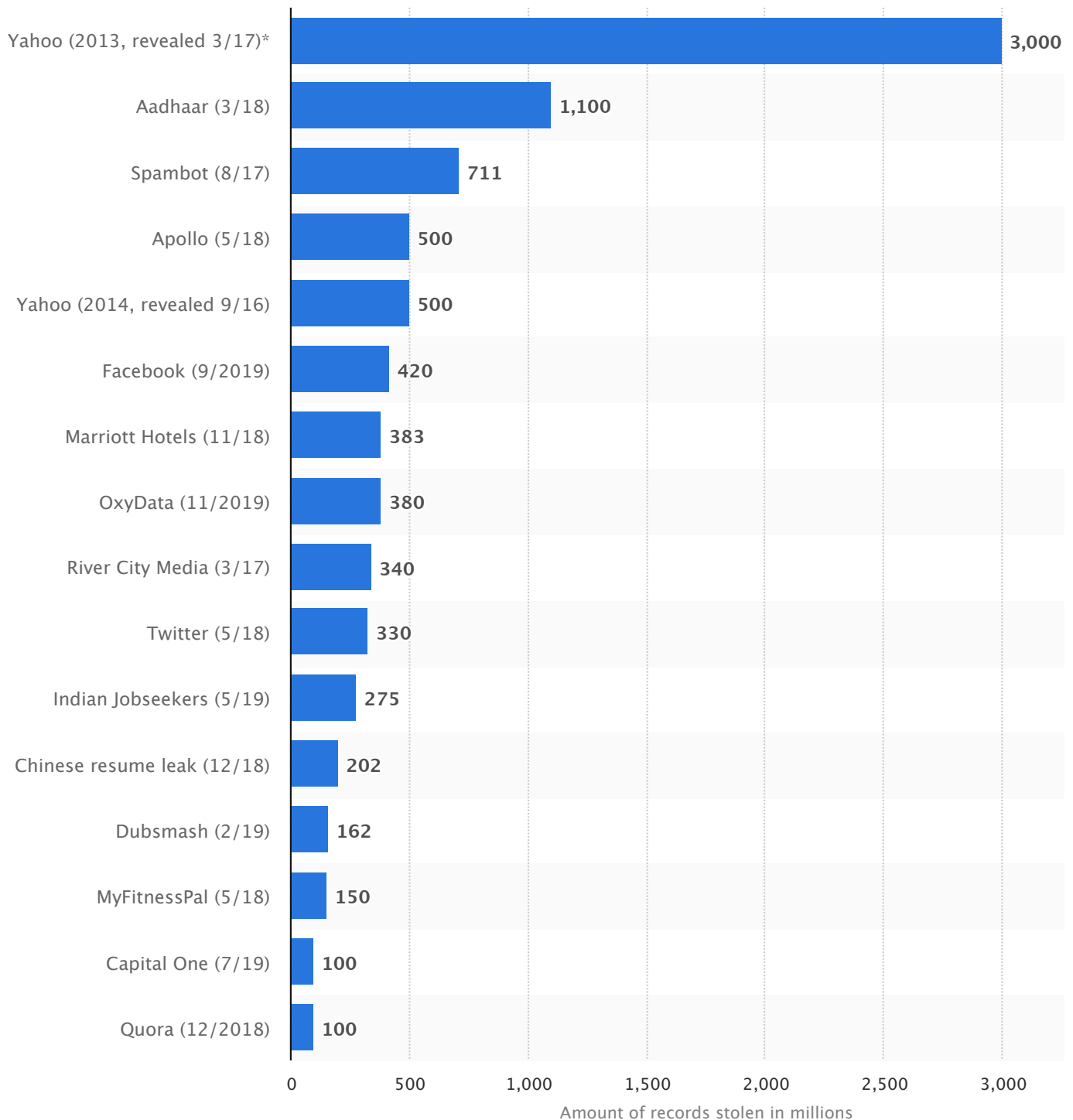
### The high price of data protection

As of 2020, [the average cost of a single data breach across all industries worldwide](#) stood at nearly 4 million U.S. dollars. This was found to be [most costly in the healthcare sector](#), with each leak reported to have cost the affected party a hefty 7.13 million U.S. dollars. The energy and financial segments followed close behind. Here, each breach resulted in a loss of approximately 6 million U.S. dollars - 2 million more than the global average. As cyber criminals become more skilled and the threat of digital attacks continues to rise, organizations worldwide are spending more on cyber security in an attempt to circumvent such breaches. As a direct result, the [annual worldwide spend on cyber security and](#)

[insurance](#) has been on the rise, with the former having increased from 75.6 billion in 2015 to 124 billion U.S. dollars by 2019.

## Number of compromised data records in selected data breaches as of January 2021

(in millions)



[Additional Information](#)

© Statista 2021 

[Show source](#) 

## Sources

- [Show sources information](#)
- [Show publisher information](#)
- [Use Ask Statista Research Service](#)

## Release date

January 2021

## Region

Worldwide

## Survey time period

January 2021

## Special properties

based on number of records lost

## Supplementary notes

\* Yahoo: Happened in 2013 but only disclosed late 2016. Number of records stolen was originally thought to be much smaller. Yahoo revealed the real numbers in March 2017

Selected data from [Information is Beautiful](#).