REVISED DRAFT

2045 Climate Action Plan

County of Los Angeles

March 2023

Photos by Mayra Beltran Vasquez

REVISED PUBLIC DRAFT

Prepared By:

County of Los Angeles, Department of Regional Planning

320 W. Temple Street

Los Angeles, CA 90012

Contact: Thuy Hua, AICP | Supervising Regional Planner

(213) 974-6461

With Assistance From:

Environmental Science Associates

(415) 896-5900

LAND ACKNOWLEDGMENT

The County of Los Angeles recognizes that we occupy land originally and still inhabited and cared for by the Tongva, Tataviam, Serrano, Kizh, and Chumash Peoples. We honor and pay respect to their elders and descendants — past, present, and emerging — as they continue their stewardship of these lands and waters. We acknowledge that settler colonization resulted in land seizure, disease, subjugation, slavery, relocation, broken promises, genocide, and multigenerational trauma. This acknowledgment demonstrates our responsibility and commitment to truth, healing, and reconciliation and to elevating the stories, culture, and community of the original inhabitants of Los Angeles County. We are grateful to have the opportunity to live and work on these ancestral lands. We are dedicated to growing and sustaining relationships with Native peoples and local tribal governments, including (in no particular order) the

- Fernandeño Tataviam Band of Mission Indians
- Gabrielino Tongva Indians of California Tribal Council
- Gabrieleno/Tongva San Gabriel Band of Mission Indians
- Gabrieleño Band of Mission Indians – Kizh Nation
- San Manuel Band of Mission Indians
- San Fernando Band of Mission Indians

To learn more about the First Peoples of Los Angeles County, please visit the Los Angeles City/County Native American Indian Commission website at lanaic.lacounty.gov.

TABLE OF CONTENTS

Appendices

ACRONYMS

2020 CCAP	*Unincorporated Los Angeles County Community Climate Action Plan 2020*
2022 Scoping Plan	*2022 Scoping Plan for Achieving Carbon Neutrality*
2045 CAP	*2045 Los Angeles County Climate Action Plan*
AB	Assembly Bill
AB 32	Global Warming Solutions Act
AB 118	Air Quality Improvement Program
AB 341	California Department of Resources Recycling and Recovery 75 percent waste diversion initiative
AB 398	Cap-and-Trade Program
AB 1493	Pavley and Advanced Clean Car Standards
AB 1668	Water Conservation and Drought Planning
ACWM	Agricultural Commissioner Weights and Measures Department
AEP	California Association of Environmental Professionals
AFOLU	Agriculture, Forestry, and Other Land Use
AHSC	Affordable Housing and Sustainable Communities Program

AR5	Intergovernmental Panel on Climate Change Fifth Assessment Report
ATP	Active Transportation Program
AV	autonomous vehicle
AVAQMD	Antelope Valley Air Quality Management District
AVL	Automatic Vehicle Locator
BAU	business-as-usual
BEV	battery electric vehicle
BIPOC	Black, Indigenous, and People of Color
BPI	Biodegradable Products Institute
BUILD	Building Initiative for Low Emissions Development
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
Cal. Code Regs.	California Code of Regulations
CAL FIRE	California Department of Forestry and Fire Protection
CalCAP	California Capital Access Program
CALeVIP	California Electric Vehicle Infrastructure Project
CALGreen Code	California Green Building Standards Code
CalRecycle	California Department of Resources Recycling and Recovery
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CAP	climate action plan
CARB	California Air Resources Board
CBO	community-based organization
CCA	community choice aggregation
CCI	California Climate Investments
CCS	capture and carbon and sequestration
CCUS	carbon capture, utilization, or storage
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDI	commercial direct install

CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	methane
CHP	combined heat and power
Climate Vulnerability Assessment	*LA County Climate Vulnerability Assessment*
CNG	compressed natural gas
CNRA	California Natural Resources Agency
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of Los Angeles government
Countywide	Los Angeles County in its entirety, inclusive of both unincorporated areas and all 88 incorporated cities
COVID-19	SARS-CoV-2 or coronavirus disease 2019
CPA	Clean Power Alliance
CPUC	California Public Utilities Commission
CRIS	Climate Registry Information System
CSO	Chief Sustainability Office
CVA	Climate Vulnerability Assessment
CVRP	Clean Vehicle Rebate Project
DER	distributed energy resource
DHS	Department of Health Services
DOE	U.S. Department of Energy
DPH	Department of Public Health
DPR	direct potable reuse
DRP	Department of Regional Planning
DU	dwelling unit
e-bike	electric bicycle
ECAA	Energy Conservation Assistance Act
EGIA	Electric & Gas Industries Association

EIR	environmental impact report
EMFAC2021	EMission FACtors 2021
EO	Executive Order
EO B-55-18	Achieve Carbon Neutrality Statewide by 2045
EO S-01-07	Low Carbon Fuel Standards
EPA	U.S. Environmental Protection Agency
ESAP	Energy Savings Assistance Program
EUI	energy use intensity
EV	electric vehicle
EVCS	electric vehicle charging station
EVSE	electric vehicle supply equipment
FCEV	fuel cell electric vehicle
FHA	Federal Housing Administration
Food DROP	Food Donation Recovery and Outreach Program
FOD	first order of decay
FTA	Federal Transit Administration
GGRF	Greenhouse Gas Reduction Fund
General Plan	*Los Angeles County General Plan 2035*
GHG	greenhouse gas
GPC	Global Protocol for Community-scale GHG Emission Inventories
GPCD	gallons per capita per day
GW	gigawatt
GWP	global warming potential
HCD	U.S. Department of Housing and Community Development
HERO	Home Energy Renovation Opportunity
HFC	hydrofluorocarbon
HOME	HOME Investment Partnerships Program
HQTA	high quality transit area
HUD	U.S. Department of Housing and Urban Development

ICLEI	U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions
II	internal-internal
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ISD	Internal Services Department
IX	internal-external
JWPCP	Joint Water Pollution Control Plant
kBtu	one thousand British thermal units
kW	kilowatt
LACDA	Los Angeles County Development Authority
LACSD	Los Angeles County Sanitation Districts
LADWP	Los Angeles Department of Water and Power
LARC	Los Angeles Regional Collaborative
LASD	Los Angeles County Sheriff's Department
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design
LFG	landfill gas collection
LiHEAP	Low Income Home Energy Assistance Program
LIWP	Low Income Weatherization Program
LNG	liquefied natural gas
LTF	Local Transportation Fund
MAP-21	Moving Ahead for Progress in the 21st Century
Metro	Los Angeles County Metropolitan Transportation Authority
$MMTCO_2$	million metric tons of carbon dioxide
MRR	Mandatory Greenhouse Gas Reporting Regulations
MSRC	Mobile Source Air Pollution Reduction Review Committee
$MTCO_2e$	metric tons of carbon dioxide equivalent
MW	megawatt
MWD	Metropolitan Water District of Southern California

N_2O	nitrous oxide
ND	negative declaration
NF_3	nitrous trifluoride
NGV	natural gas vehicle
NZEV	near-zero-emission vehicle
Offsite Program	Offsite GHG Reduction Program
OurCounty Sustainability Plan	*OurCounty: Los Angeles Countywide Sustainability Plan*
PACE	Property Assessed Clean Energy
Paris Agreement	2016 Paris Climate Agreement
Parks	Department of Parks & Recreation
PEV	plug-in electric vehicle
PFC	perfluorocarbon
PHEV	plug-in hybrid electric vehicle
PM	particulate matter
PV	photovoltaic
PW	Department of Public Works
RGAP	Ridership Growth Action Plan
RMP	Refrigerant Management Program
RPS	Renewables Portfolio Standard
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SB 32	California Global Warming Solutions Act of 2006
SB 100	Renewable Portfolio Standards
SB 606	Water Management Planning
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Monitoring District
SCE	Southern California Edison
SEA	Significant Ecological Area
SF_6	sulfur hexafluoride

SGC	Strategic Growth Council
SLCP	Short-Lived Climate Pollutant
SoCalGas	Southern California Gas Company
SoCalREN	Southern California Regional Energy Network
solar PV	solar photovoltaic
SOV	single-occupancy vehicle
SP	service population
SWIMS	Los Angeles County Public Works Solid Waste Information Management System
SWIS	California Department of Resources Recycling and Recovery's Solid Waste Integrated System
TAZ	traffic analysis zone
TBD	to be determined
TCC	Transformative Climate Communities
TDA	Transportation Development Act
TDM	transportation demand management
TECH	Technology and Equipment for Clean Heating
TEP	Transportation Electrification Partnership
TIRCP	Transit and Intercity Rail Capital Program
Title 24	California Green Building Standards Code
TOD	Transit Oriented District
tpd	tons per day
TSSP	Traffic Signal Synchronization Program
USD	U.S. dollars
USDA	U.S. Department of Agriculture
U.S. EPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled
WDACS	County Workforce Development, Aging and Community Services
WUI	wildland urban interface
XI	external-internal

XX	external-external
ZEV	zero-emission vehicle
ZNE	Zero Net Energy

GLOSSARY

AB 1668	A legislative standard enacted in 2018 to guide water conservation and use efficiency for indoor and outdoor uses.
AB 1279	The California Climate Crisis Act. This statute codified Executive Order B-55-18's 2045 carbon neutrality target and established an additional GHG emissions target to reduce anthropogenic emissions 85 percent below 1990 levels by 2045.
AB 1398	A statute that extended the state's Cap-and-Trade Program through 2030. A key strategy for reducing GHG emissions in California, the Cap-and-Trade Program sets total allowable emissions for facilities and creates carbon offset credits through carbon sequestration projects.
AB 32	The Global Warming Solutions Act. This statute codified Executive Order S-3-05 and authorized the California Air Resources Board to implement a comprehensive, multiyear program to reduce GHG emissions from all sources throughout the state.
Active transportation	A mode of transportation that includes walking, running, biking, scootering, skateboarding, and other human-powered forms of transportation. It can also include low-speed electrical devices such as motorized wheelchairs, e-scooters, and electric-assist bicycles.

Adaptation	The effort to adjust practices and development in response to climate change to lessen future impacts.
Anaerobic digestion	A process by which organic matter, such as food waste or sewage, is broken down in the absence of oxygen to produce biogas and biofertilizer.
Biodiversity	The variety and variability of flora, fauna, and ecosystems. Biodiversity can be observed on macro levels, micro levels, and in between. Biodiversity is complex, fragile, and increasingly threatened by urbanization and climate change. Rich biodiversity supports many aspects of human life, from food and medicine to environmental quality.
Biodegradable Products Institute (BPI) certification	A certification for environmentally friendly products that meet high-quality compostable standards, and are proven to compost without toxic or lingering plastic residues.
Biogas	A type of gas, composed primarily of methane, derived from the process of bacterial decomposition of sewage, manure, food, plant crops, or other organic waste products.
Biogenic CO_2	Carbon emissions released through the combustion or decomposition of natural and organic sources (i.e., trees, soil, wood).
Biomass conversion	Thermal conversion of organic materials such as wood waste, lawn clippings, agricultural waste, and nonrecyclable paper, when separated from other waste.
Building decarbonization	The process of creating buildings that contribute zero GHG emissions. For example, a newly constructed building can incorporate reused, recycled, and other low-carbon-intensity materials. Operationally, the building is energy efficient and uses renewable, zero-carbon energy sources for heating, cooling, and power.
Carbon dioxide (CO_2)	A GHG made up of one carbon atom and two oxygen atoms that is released primarily through the burning of fossil fuels, other hydrocarbons, solid waste, and trees and wood products. Changes in land use also play a have an impact. Deforestation and soil degradation add carbon dioxide to the atmosphere, while forest regrowth takes it out of the atmosphere. While carbon dioxide is naturally occurring, the proportion of carbon dioxide in our atmosphere is increasing as a result of human activities. Increasing concentration levels of carbon dioxide and other GHGs contribute to climate change.

Carbon efficient	Contributing fewer carbon emissions compared to a conventional process while still providing the same service. A building, machine, or process is carbon efficient if it can deliver more functions or services for the same amount of carbon emissions, or the same function or service for fewer carbon emissions, compared to a conventional alternative.
Carbon neutral	A system or jurisdiction that has net zero GHG emissions, meaning that GHG emissions generated by sources such as transportation, power plants, and industrial processes are less than or equal to the amount of carbon dioxide that is stored, both in natural sinks and through mechanical sequestration. Strategies to achieve carbon neutrality include renewable energy supply, efficient buildings, low-carbon transportation, sustainable materials choices, and deep retrofits to existing buildings and infrastructure. Carbon neutrality may require carbon sequestration technologies to capture the remainder of GHG emissions.
Car share	An integrated network of passenger vehicles available for short-term rental. Car share can take the form of return systems in which a vehicle must be returned to the parking space from which it was rented. Alternatively, it can take the form of point-to-point systems in which the car can be returned to another space or left anywhere within a predetermined geographic zone.
Chargeback	A usage fee for electric vehicle chargers.
Clean manufacturing	Manufacturing processes that minimize waste and pollution production and limit or eliminate the use of toxic chemicals.
Clean Power Alliance (CPA)	A nonprofit community choice energy program now serving 32 jurisdictions across Los Angeles and Ventura counties. The CPA offers participants the option to increase their share of renewable energy, offering three tiers of electric service: Lean Energy at 36 percent renewable, Clean Energy at 50 percent renewable, and 100 percent Renewable.
Climate vulnerability assessment	An analysis of the extent to which a species, habitat, ecosystem, or civilization is susceptible to harm from climate change impacts. Vulnerability assessments are an integral component of climate adaptation planning.
Cogeneration facility	An energy plant that recovers waste heat from conventional power generation to produce thermal energy. Also called a *combined heat and power (CHP) system.*

Community shared solar facilities	Solar photovoltaic (PV) systems that generate and supply electricity to multiple customers within a specific geographic area. Participants typically make payments to reserve a portion of a solar system or the rights to a portion of its output. As the system generates electricity, all participants receive credits on their energy bill.
Compost	The product, rich in nutrients, that results from the decomposition of organic material. Material used to make compost includes landscape trimmings, agricultural crop residues, paper pulp, food scrap, wood chips, manure, and biosolids. These are typically referred to as *feedstock*.
Cool pavement	A type of paving material that reflects more solar energy, enhances water evaporation, or has been otherwise modified to remain cooler than conventional pavements. Cool pavements include a range of established and emerging technologies that communities are exploring as part of their heat island reduction efforts.
Decarbonization	Reduction in the carbon intensity and GHG emissions of a system or sector, such as buildings or transportation.
Disadvantaged communities	The areas that suffer most from a combination of economic, health, and environmental burdens as defined by the California Office of Environmental Health Hazard Assessment. These burdens typically include poverty, unemployment, health conditions, air and water pollution, and hazardous waste.
Distributed energy resources (DERs)	Decentralized sources of energy that are smaller than utility-scale energy sources and can be aggregated to provide the power necessary to meet regular demand.
Economic opportunity	The potential of someone to realize economic success. Similar to economic mobility, economic opportunity can be influenced by many factors, such as where one lives and goes to school or the availability of jobs.
Ecosystem services	The benefits and services (i.e., water purification, nutrient cycling, raw materials availability, pollination) provided to people directly or indirectly by ecosystems, wildlife, and natural systems.
E-scooters/electric scooters	Scooters with an electric motor that assist with user mobility. See also *micromobility*.

Electric vehicles (EVs)	An umbrella term to describe a variety of vehicle types that use electricity as their primary fuel source for propulsion or as a means to improve the efficiency of conventional internal combustion engine. These generally include battery electric vehicles, plug-in hybrid electric vehicles, and fuel cell electric vehicles.
Embodied carbon	The GHG emissions that result from the manufacturing, processing, transportation, installation, maintenance, and disposal of building materials.
Energy efficiency	The use of less energy to provide the same service. A process, building, machine, or other energy-consuming object is more energy efficient if it delivers more functions or services for the same energy input, or the same function or service for less energy input, than a conventional process.
Energy retrofit	Major changes to the structure or systems of an existing building for the purpose of achieving significant reductions in energy consumption (and operational costs) with the use of more efficient technologies, products, and designs. Energy retrofits may also reduce water consumption and improve occupant amenities.
Energy storage system	Technologies that collect generated energy so that it may be used at another time. Energy storage includes both electric systems such as batteries and thermal systems such as hot and cold water storage tanks. Energy storage can enhance the technical and economic viability of a distributed generation system and can operate critical systems during grid outages or in the case of emergency.
Energy use intensity (EUI)	The amount of energy consumed by a building over a period of time and normalized by another factor, such as per square foot or per person. EUI is most often represented as total energy consumption of one building in one year (typically presented in thousand British thermal units [kBtu]) divided by the total gross floor area of the building. These factors allow for the comparison of building performance across buildings of different types and sizes. See also *kBtu*.
Environmental justice	As defined by Government Code Section 65040.12(e), “the fair treatment of people of all races, cultures and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies.
Equity	An end state in which all groups have access to the resources and opportunities necessary to improve the quality of their lives.

Executive Order B-30-15	An executive order that established a GHG emissions reduction target of 40 percent below 1990 levels by 2030.
Executive Order B-55-18	An executive order by then-Governor Edmund G. Brown Jr. that set a goal to bring California to carbon neutrality by 2045, five years before the Paris Climate Agreement deadline.
Executive Order S-3-05	An executive order that established the state's first GHG emissions reductions targets: reduction to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.
First/last mile	The beginning or end of an individual's trip on transit. Strategies may include bike lanes, bike parking, bike share, sidewalks, and crosswalks, bike share, signage, and wayfinding (e.g., information kiosks and mobile apps).
Fossil fuels	Hydrocarbon fuels formed by natural processes such as the anaerobic decomposition of organic matter. This process is time-intensive and fossil fuels are regenerated on the order of magnitude of millions of years. Typical fossil fuels include coal, oil, and natural gas.
Frontline communities	Marginalized groups of people who have historically experienced a disproportionately high share of environmental impacts, while not necessarily equally benefiting from policies to address the environmental effects. People of color and those earning low incomes tend to be most vulnerable to climate change, yet they tend to have fewer resources to prevent, adapt, or recover from climate disasters.
Gigawatt (GW)	A unit of electric power equal to 1,000 megawatts (MW) or one billion watts.
Global Warming Solutions Act (AB 32)	A law enacted by the State of California in 2006 that established a statewide goal to address climate change by reducing GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050.
Green chemistry	The design of chemical products or processes that reduce or eliminate the generation of hazardous substances.
Green infrastructure	A method for naturally managing rain and floodwaters. Green infrastructure reduces and treats stormwater runoff while also improving the local environment by mimicking natural processes. Green infrastructure includes strategies such as green roofs, bioswales, and permeable pavements.

Greenhouse gas (GHG) emissions	Gases that trap heat in the atmosphere by absorbing and emitting solar radiation within the atmosphere, causing a greenhouse effect that warms the atmosphere and leads to global climate change. The main GHGs are water vapor, carbon dioxide, methane, nitrous oxide, and ozone.
Gray water	Wastewater generated in homes and offices that is sourced from baths, sinks, washing machines, or kitchen appliances. Gray water may contain amounts of dirt, food, grease, or cleaning products, but does not have fecal contamination.
Global warming potential (GWP)	The cumulative radiative forcing, both direct and indirect effects, over a specified time horizon resulting from the emission of a unit mass of gas related to carbon dioxide.
Habitat connectivity	The degree to which patches of land used as habitat by local plants and animals are connected to each other. Habitat connectivity ensures that species are able to move around freely to mate, hunt, forage, or reproduce. Habitat connectivity also allows species the ability to migrate to preferable areas in case of habitat loss or climate event, avoiding habitat fragmentation.
Habitat linkages	An area of land that poses sufficient cover, food, forage, water, or other essential elements to serve as a movement pathway for species between two or more areas of habitat.
Heat island effect	Measurable elevated temperatures in developed areas, as compared to more rural surroundings. Temperatures in developed areas are affected by absorption of heat by hardscapes and radiation of heat into surrounding areas, resulting in local climate changes. Heat islands are influenced by geographic location and by local weather patterns, with effects changing on a daily or seasonal basis.
High-frequency transit	Transit that has reliable, high-frequency service, often with service every 15 minutes or less.
High-global-warming-potential (high-GWP) refrigerants	Potent GHGs with high global warming potential (i.e., hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) that result in greater emissions from an individual unit relative to carbon dioxide.
High quality transit area (HQTA)	Generally, a walkable transit area that is consistent with the adopted Regional Transportation Plan and is within one half-mile of a well-serviced transit stop or a transit corridor providing service frequency of every 15 minutes or less during peak commute hours.

Intergovernmental Panel on Climate Change (IPCC)	A United Nations body that evaluates current impacts and future risks of a changing climate. The IPCC prepares comprehensive scientific reports on climate change and provides technical and policy-relevant guidelines for reducing the rate at which climate change occurs.
Impermeable areas	Solid surfaces, such as paved roads and parking lots, that do not allow water to penetrate into the ground below.
kBtu	One thousand British thermal units. Often used to calculate the energy use intensity per square foot of buildings.
Life-cycle carbon intensity	The overall GHG emissions associated with all stages of the life cycle of a commercial product, process, or service, including each stage of its production and use. For instance, in the case of a manufactured product, GHG emissions from raw-material extraction and processing (cradle), through the product's manufacture, distribution, and use, to the recycling or final disposal of the materials composing it (grave) are part of the product's life-cycle carbon intensity.
Light-duty vehicle	A passenger vehicle with a maximum gross vehicle weight rating of 8,500 pounds.
Medium-duty vehicle	A passenger vehicle with a maximum gross vehicle weight rating from 8,501 to 10,000 pounds.
Methane (CH_4)	A gas made up of one carbon atom and four hydrogen atoms. Methane is the main component of natural gas, commonly used as a fuel for heating. Methane is released during the production and distribution of natural gas, but also through livestock and other agricultural practices and by the decay of organic waste in landfills. Like carbon dioxide, methane is a GHG and exacerbates climate change. However, methane has a much higher global warming potential than carbon dioxide, meaning that methane has a much larger effect than the same amount of carbon dioxide.
Microgrid	An electrical distribution network that is connected to two or more buildings in a local area that can enter into "island mode" (i.e., operates in isolation from the central or local electricity distribution network) and provide power to buildings without using the central grid.
Micromobility	Transportation options that include personal vehicles meant to carry one or two passengers such as bicycles, small electric cars, or scooters.

Micro transit	Public or private multi-passenger transportation services that serve passengers using dynamically generated routes; they provide transit-like service on a smaller, more flexible scale.
Mode	A particular form of travel such as walking, traveling by automobile, traveling by bus, or traveling by train.
Native population	The indigenous inhabitants who have lived or currently live in the geographic area within the current boundaries of Los Angeles County before and after the arrival of Europeans.
Natural forests	Native trees and related vegetation in natural land areas where there are no clearly visible indications of human activities and where the ecological processes are not significantly disturbed.
Natural gas	A non-renewable hydrocarbon consisting largely of methane, a potent greenhouse gas. See also *fossil fuels*.
Near-zero-emission vehicle (NZEV)	Plug-in hybrid electric vehicles powered by both an internal combustion and battery-electric power train that are capable of operating like a zero-emission vehicle for some distances. NZEVs are considered a bridge technology that will help the development of the full zero-emission vehicle market.
Negative-carbon concrete	A process where carbon is captured during the production of concrete and then emitted over time during the concrete's lifetime, resulting in a carbon-negative effect.
Net Zero Carbon	A system, process, building, or community that mitigates any GHG emissions associated with its resource use or does not use energy sources that contribute to GHG emissions.
Net Zero Waste	A system, process, building, or community that sends no waste to landfills by reducing consumption and maximizing recycling and composting.
Net Zero Water	A system, process, building, or community that reduces water consumption and does not rely on off-site water sources to meet any of its water demand. Instead, alternative on-site sources such as rainwater collection or wastewater treatment and reuse are used.
Non-biogenic CO_2	Carbon emissions from the combustion of fossil fuels.
Ordinance	A piece of legislation enacted by a municipal authority.

Organic waste	Biodegradable waste containing materials from living organisms. Organic waste may include food waste, green waste, landscaping and pruning waste, nonhazardous wood waste, or food-soiled paper waste that is mixed in with food waste. Organic waste can be processed through composting or anaerobic digestion.
OurCounty Sustainability Plan	A regional sustainability plan for the 88 cities and unincorporated areas of Los Angeles County. The OurCounty Sustainability Plan does not supersede the General Plan, but adds to LA County's strategic framework for addressing climate change.
Paris Climate Agreement	A global action plan to avoid the catastrophic impacts of climate change. Adopted in December 2015, the Paris Agreement formalized world leaders' efforts to limit the global average temperature increase to 1.5 degrees Celsius above preindustrial levels. The agreement urged national leaders to join forces with states and local governments to commit to net-zero carbon emissions by 2050.
Particulate matter (PM)	A combination of solid and liquid droplets found in the air. Particulate matter can include dust, dirt, soot, or smoke. Some PM is large enough to be seen, but other types are microscopic (fine particulate matter). Fine particulate matter can travel deeply into the human respiratory tract and can cause health effects such as throat irritation, coughing, or asthma.
Precipitation whiplash	A condition under which the region is likely to experience drier periods than historically experienced followed by much wetter periods with more extreme rain events, which can lead to increased water scarcity, mudslides, and flooding.
Public-private partnership	A collaborative arrangement between public agencies and private-sector companies. These partnerships allow large-scale government projects to be completed with private funding, where the private entities are able to receive operating profits.
Plug-in electric vehicle (PEV)	A vehicle that can be recharged from an external source of electricity, such as a wall socket, and that stores this electricity in rechargeable battery packs that power the vehicle's motion.
Reach code	A local building energy code that "reaches" beyond the state's minimum requirements for energy use in building design and construction.
Regenerative agricultural practices	A holistic land management and agriculture practice that reverses the effects of climate change through rebuilding soil organic matter and restoring degraded soil biodiversity. Practices that support regenerative agriculture include well-managed grazing, the use of compost, or minimal tillage.

Renewable energy	Energy coming from resources that are naturally replenished on a human time scale, such as sunlight, wind, tides, waves, bioenergy, hydrogen, and geothermal.
Residual emissions	The emissions remaining after all technically and economically feasible opportunities to reduce emissions in all covered scopes and sectors have been implemented.
Resilience	The capacity to survive, adapt, and thrive in the face of chronic stresses and acute shocks and to even transform as conditions require. See also *shocks and stresses*.
Resilience hubs	As defined by the Urban Sustainability Directors Network, "community-serving facilities augmented to support residents, coordinate communication, distribute resources, and reduce carbon pollution while enhancing quality of life. Hubs provide an opportunity to effectively work at the nexus of community resilience, emergency management, climate change mitigation, and social equity while providing opportunities for communities to become more self-determining, socially connected, and successful before, during, and after disruptions."
SB 32	A statute that codified a target to reduce California's 2030 emissions by 40 percent below 1990 levels.
SB 535	A statute requiring that 25 percent of all funds allocated pursuant to an investment plan for the use of state monies collected through a cap-and-trade program be allocated to projects that benefit disadvantaged communities, and that at least 10 percent of these be spent on projects located in disadvantaged communities.
SB 606	A statute for water management planning that established water efficiency regulations and reporting requirements, and requires setting urban water use objectives.
Shocks and stresses	*Shocks:* Sudden events that threaten or affect the community's immediate well-being. These can include earthquakes, fires, landslides, public health emergencies, civil unrest, terrorism, chemical emergencies, financial crises, extreme heat, flooding, infrastructure outages or disruptions, or building failures. *Stresses:* Longer term, chronic challenges that weaken natural, built, and economic or human resources. These can include inequity, disparities in employment, health and education, crime and violence, homelessness, economic recession, lack of affordable housing, food insecurity, climate change, air pollution, and the heat island effect.

Significant Ecological Areas (SEAs)	Land identified as holding important biological resources representing the wide-ranging biodiversity of Los Angeles County, based on the criteria for SEA designation established by the General Plan and as mapped in the adopted SEA Policy Map.
Single-occupancy vehicle (SOV) trips	Trips in privately operated vehicles that contain only one occupant.
Source separation	The proper separation of different waste streams for waste collection and treatment; for instance, properly separating and discarding of paper recycling from organic waste.
Sunset strategy	A strategy to manage declining industries, such as the oil and gas industry, and phase them out.
Sustainability	Meeting the needs of the present without compromising the ability of future generations to meet their own needs.
Transit-Oriented District (TOD)	A planning strategy that explicitly links land use and transportation by focusing mixed uses, mixed housing, employment, and commercial growth around bus and rail stations (approximately one-quarter to one-half mile radius of a significant transit facility station). TODs can reduce the number and length of vehicle trips by encouraging more bicycle/pedestrian and transit use and can support transit investments by creating the density around stations to boost ridership.
Transportation demand management (TDM)	Strategies to change travel behavior in an effort to reduce traffic congestion, increase safety and mobility, conserve energy, and reduce GHG emissions. These strategies are intended to reduce the demand for roadway travel and increase the overall efficiency of a local or regional transportation system. Strategies may include ridesharing, telecommuting, park-and-ride programs, pedestrian improvements, and alternative work schedules.
Unincorporated areas	Areas that are not within the boundaries of a city. More than 65 percent of Los Angeles County (2,654 square miles) is unincorporated. For the population of over 1 million people living in these areas, the LA County Board of Supervisors acts as their city council and the supervisor representing a specific area acts as the city mayor. County departments provide the municipal services for these areas. There are approximately 120–125 unincorporated areas in Los Angeles County.
Urban agriculture	Agriculture practices in urban areas that take the form of front-yard, backyard, rooftop, or balcony gardening; community gardening in vacant lots or parks; or roadside agriculture and livestock grazing in available open space.

Urban forests	Trees and related vegetation in urban and near-urban areas, including but not limited to street trees, park trees, residential trees, and other trees on other public or private properties.
Urban heat island effect	A phenomenon in urban cities created by dense concentrations of heat-absorbing surfaces (i.e., dark pavements, roofs, buildings) and lack of vegetation surfaces that results in heat retention and contributes to global warming
Vehicle miles traveled (VMT)	A measurement of miles traveled by vehicles within a specified region for a specified time period.
Vision Zero	The commitment to eliminate traffic-related deaths and severe injuries by a certain date.
Vulnerable populations	The population of Los Angeles County including older adults, people with disabilities, children, people of color, and people with chronic medical conditions who are at elevated risk of climate change impacts such as extreme heat, fire, and flooding. These communities typically lack the resources to protect themselves from climate events or recover quickly from damage or illness.
Waste diversion	The process of managing a waste stream such that waste products do not end up in landfills. Waste can be diverted through strategies such as reuse, recycling, composting, or anaerobic digestion.
Waste generation	The total amount of waste created within a jurisdiction (or by a business or residence), both that which is disposed and that which is diverted.
Watershed	An area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel.
Weatherization	The modification of a building to reduce energy consumption and optimize energy efficiency by protecting the interior of a building from environmental elements such as sunlight, precipitation, wind, and temperature.
Working lands	Farms, ranches, forests, other extractive land uses, and managed natural areas that support economic activity and land-based livelihoods. These areas supply life-sustaining resources including clean water, air, and food.
Zero-emission vehicles (ZEVs)	Vehicles that produce no tailpipe emissions. Generally, ZEVs feature electric powertrains. Technically, ZEVs are still responsible for some GHG emissions, if the GHG content from the electricity generation comes from fossil fuel sources.

Zero net energy (ZNE) building	As defined by the U.S. Department of Energy, “An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”

EXECUTIVE SUMMARY

The County of Los Angeles (County) acknowledges the well-established consensus that human activity, especially the combustion of fossil fuels since the beginning of industrialization, is the primary cause of the climate crisis. Now more than ever, climate change has become a real, urgent, and significant threat, with impacts being felt today in Los Angeles County and around the globe. Climate change has already inflicted harm on Los Angeles County residents, especially its most vulnerable, and has the strong potential to negatively affect the safety, public health, economy, and quality of life of future generations. On September 4, 2018, the County Board of Supervisors adopted a motion supporting the 2016 Paris Climate Agreement (Paris Agreement) and added the County to the *We Are Still In* Declaration. By this action, the County is committed to adapting its programs and services to reduce unincorporated Los Angeles County's greenhouse gas (GHG) emissions and help limit global temperature increases.

This *2045 Los Angeles County Climate Action Plan* (2045 CAP) is the County's path toward meeting the goals of the Paris Agreement and achieving carbon neutrality for unincorporated Los Angeles County. The 2045 CAP builds on previous climate action work from the *Unincorporated Los Angeles County Community Climate Action Plan 2020* (2020 CCAP), adopted in October 2015 as a subcomponent of the Air Quality Element of the *Los Angeles County General Plan 2035* (General Plan). The 2045 CAP identifies strategies, measures, and actions to mitigate GHG emissions from community activities, which may include some municipal operations; however, municipal operations are not the focus of this plan.

Actions to reduce GHG emissions provide multiple co-benefits for residents, employees, and employers. These benefits have not always reached disadvantaged communities. For example, residents of affordable housing and multifamily housing have not been well served by local renewable energy programs, such as rooftop solar, leading to cycles of disinvestment and potentially higher

energy bills. Concurrently, many of these same residents are already extremely rent and utility burdened, and the COVID-19 pandemic has exacerbated these problems. The lack of housing and high cost of living in the region mean that increased household expenses could trigger displacement. New and innovative approaches are needed to bring the benefits of renewable energy to all residents while protecting and increasing affordable housing. The 2045 CAP attempts to address these issues to reduce GHG emissions while encouraging the development of affordable and equitable housing.

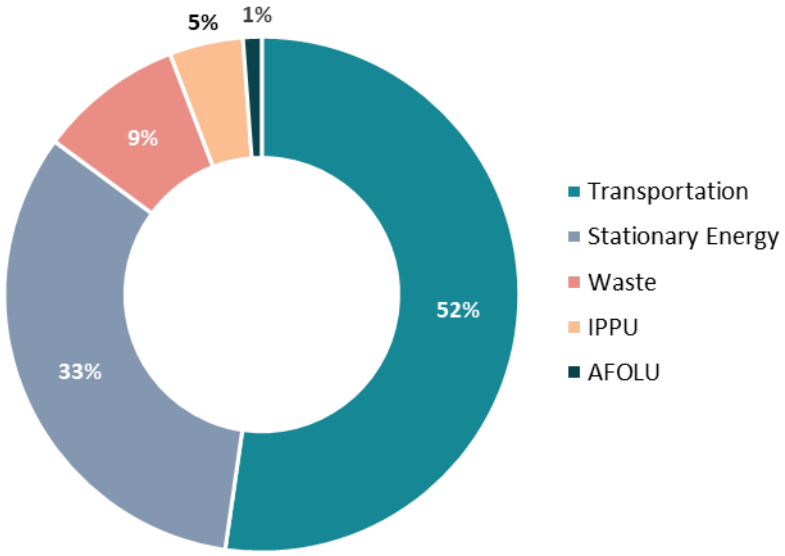
Since the adoption of the 2020 CCAP, local, state, and international leaders have established new targets for carbon reductions that seek deep and long-term transformations in emissions-generating sectors. In 2016, global leaders signed the Paris Agreement, a plan to limit the global average temperature increase to 1.5 degrees Celsius above pre-industrial levels. In 2016, then–California Governor Jerry Brown signed Senate Bill (SB) 32, which established a 2030 target to reduce GHG emissions by 40 percent below 1990 levels. In 2018, Governor Brown issued Executive Order (EO) B-55-18, which established a new statewide goal to reach carbon neutrality by 2045 and achieve and maintain net negative emissions thereafter. In September 2022, Governor Gavin Newsom signed Assembly Bill (AB) 1279, which codified EO B-55-18 by requiring that the State achieve net zero GHG emissions no later than 2045. AB 1279 also requires the state to reduce direct anthropogenic GHG emissions 85 percent below 1990 levels by 2045. On December 15, 2022, the California Air Resources Board adopted the *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), which lays out a path to achieve the statewide goals codified in AB 1279.

The 2045 CAP is an update to the 2020 CCAP, and it sets new GHG emissions reduction targets beyond the 2020 time frame that are consistent with state goals pursuant to SB 32, AB 1279, and the 2022 Scoping Plan. The 2045 CAP includes the following elements:

- A GHG emissions inventory from communitywide activities in unincorporated Los Angeles County in 2018, along with a baseline inventory for 2015.
- Projections of future emissions for 2030, 2035, and 2045.
- GHG emissions reduction targets for 2030, 2035, and 2045.
- A long-term aspirational goal for carbon neutrality by 2045.
- Climate strategies, measures, and actions to reduce GHG emissions from major sectors.
- Technical modeling appendix to explain the GHG emissions reduction estimates.
- A consideration of environmental justice and equity concerns.
- Implementation and monitoring measures to ensure successful climate action.
- A new development review consistency checklist to allow future projects to streamline GHG emissions analyses pursuant to the California Environmental Quality Act (CEQA).

Greenhouse Gas Emissions in Unincorporated Los Angeles County

Estimated GHG emissions generated by community activities in unincorporated Los Angeles County in 2018 (the most recent inventory completed) were approximately 5.2 million metric tons of carbon dioxide equivalent ($MTCO_2e$). The largest contributor to these emissions (at 52 percent) is the transportation sector, which consists mostly of on-road vehicles. The second-largest contributor (at 33 percent) is the stationary energy sector, which includes emissions from electricity generation facilities, landfill-to-gas facilities, district energy systems, and the use of natural gas use in buildings. It also includes emissions from fossil fuel extraction and fugitive emissions from oil and natural gas systems. Together, these two sectors constitute approximately 85 percent of all community-scale GHG emissions in unincorporated Los Angeles County. The remaining sources are waste and wastewater generation (9 percent), industrial processes and product use (5 percent), and the agriculture, forestry, and other land use (AFOLU) sector (1 percent). **Figure ES-1** shows a breakdown by sector of 2018 communitywide GHG emissions for unincorporated Los Angeles County.



Abbreviations: AFOLU = agriculture, forestry, and other land use; IPPU = industrial processes and product use

Figure ES-1: 2018 Greenhouse Gas Emissions Inventory for Unincorporated Los Angeles County, by Sector

CAP Strategies to Reduce Greenhouse Gas Emissions

Achieving carbon neutrality will require ambitious climate actions that address GHG emissions from all sectors and sources. To reduce emissions across all sectors, the 2045 CAP establishes three GHG emissions reduction targets and one long-term aspirational goal:

- *Target:* By 2030, reduce GHG emissions by 40 percent below 2015 levels.
- *Target:* By 2035, reduce GHG emissions by 50 percent below 2015 levels.
- *Target:* By 2045, reduce GHG emissions by 83 percent below 2015 levels.
- *Aspirational Goal:* By 2045, achieve carbon neutrality in unincorporated Los Angeles County.

The 2045 CAP includes 10 strategies and 25 measures that, when combined, achieve all three of the GHG emissions reduction targets for 2030, 2035, and 2045. These strategies, measures, and actions also put unincorporated Los Angeles County on an aggressive path toward carbon neutrality and are estimated to reduce annual emissions by more than 1.5 million $MTCO_2e$ in 2030, more than 2 million $MTCO_2e$ in 2035, and nearly 3 million $MTCO_2e$ in 2045. All strategies require that the County employ climate leadership and lead by example, recognizing the County's important role as a convener and leader in the region. Reaching the targets and goals of the 2045 CAP requires regional collaboration and partnerships with various stakeholders, including communities, local governments, and the State of California. The County will continue to foster these partnerships to move toward a low-carbon future.

Energy Supply

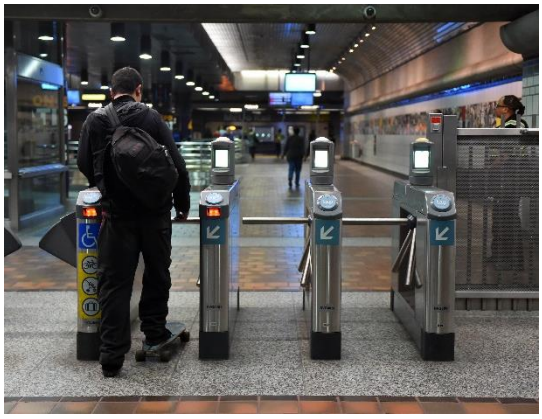
The source of energy used in unincorporated Los Angeles County is essential to the County's goal to reduce GHG emissions associated with energy supply and consumption. This strategy includes a range of measures aimed at decarbonizing the energy used in buildings and energy industries. The approach combines decarbonizing the energy supply, generating energy on-site through renewables, and utilizing load management and peak reductions. The County's participation in the Clean Power Alliance, and its commitment to sourcing 100 percent renewable energy for its electricity supply by 2025, will enable this shift and ensure a low-carbon energy future.

Energy Supply Strategy

- Decarbonize the energy supply.

Transportation

The transportation sector makes up 52 percent of communitywide GHG emissions. Transportation strategies emphasize and promote alternatives to single-occupancy trips, including public transit, active transportation such as biking and walking, and land use planning that better connects housing to jobs and services. Transportation strategies also include the transition to zero-emission vehicles throughout unincorporated Los Angeles County. The success of the transportation strategies will rely on the availability of low-carbon electricity as a fuel source, including expanded electric vehicle infrastructure, as well as the adoption and expansion of zero-emission technologies.



Transportation Strategies

- Increase densities and diversity of land uses near transit.
- Reduce single-occupancy vehicle trips.
- Institutionalize low-carbon transportation.

Building Energy and Water

Buildings are a major source of emissions because of their heating, cooling, and power needs. Efforts to decarbonize building energy use will require a mix of energy efficiency programs and a shift to electric alternatives for natural gas appliances.

Building Energy and Water Strategies

- Decarbonize buildings.
- Improve efficiency of existing building energy use.
- Conserve water.

Waste

The County is committed to a sustainable waste future. Creating this future will require programs that both support stakeholder engagement and education and develop the necessary infrastructure to support zero-waste goals. Strategies in the 2045 CAP expand efforts to reduce and reuse waste at the source and divert waste from landfills through participation in recycling programs, and by converting organic waste, which is responsible for the majority of the waste sector's emissions, to compost and fertilizers.

Waste Strategy

- Minimize waste and recover energy and materials from the waste stream.

Agriculture, Forestry, and Other Land Use

The AFOLU sector's strategies focus on conservation and restoration of existing forest lands and urban forests to sequester carbon and support local ecosystems. These strategies promote clean water, air, and food, in addition to a reduced urban heat island effect. Preserving and supporting unincorporated Los Angeles County's forests, parks, and working lands is essential to reducing climate change impacts and protecting the communities, economies, and ecosystems that depend on the land.

Agriculture, Forestry, and Other Land Use Strategies

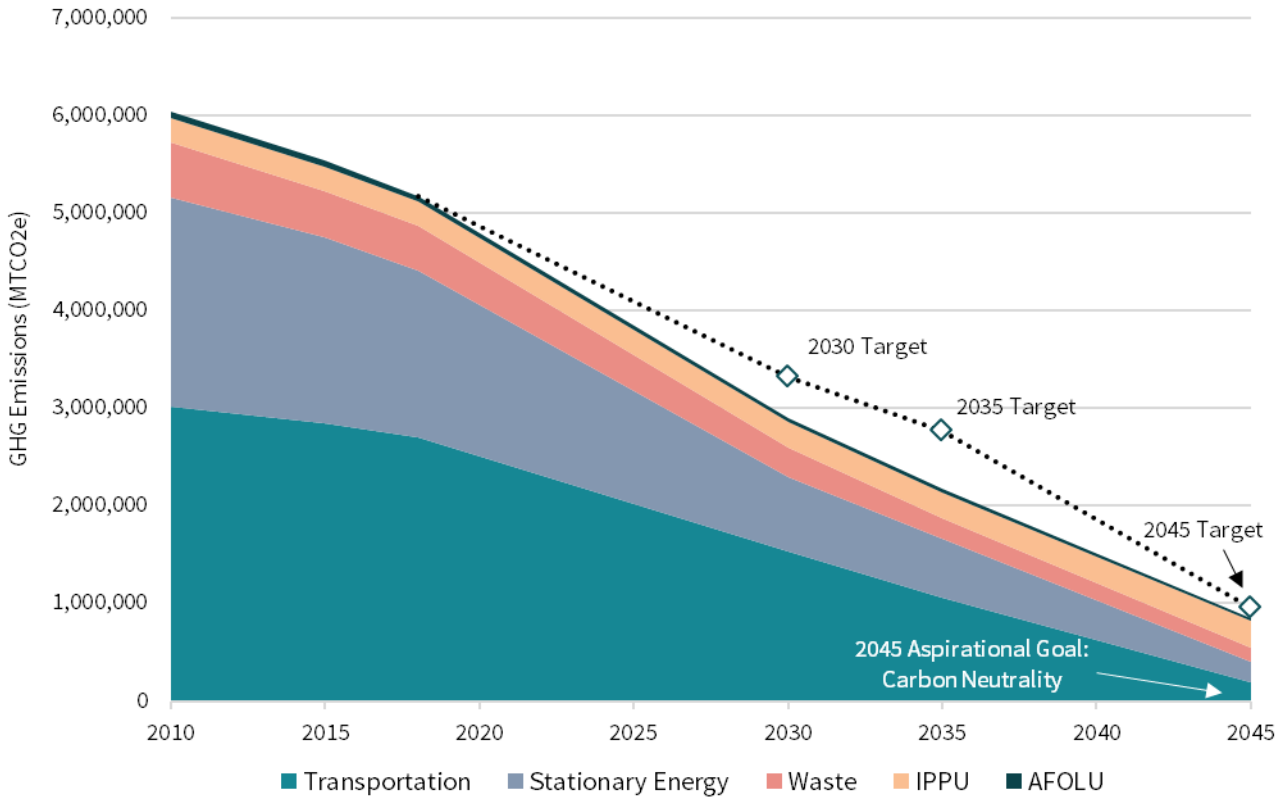
- Conserve and connect wildlands and working lands.
- Sequester carbon and implement sustainable agriculture.

The Path to Carbon Neutrality

The 2045 CAP puts unincorporated Los Angeles County on a path to achieve carbon neutrality by reducing emissions from each sector. **Figure ES-2** shows unincorporated Los Angeles County's path toward the 2045 carbon-neutral goal, representing implementation of the 2045 CAP, which should enable unincorporated Los Angeles County to meet or exceed its 2030, 2035, and 2045 emissions targets, and make substantial progress toward carbon neutrality. As shown, the largest decline in emissions will result from changes to the transportation and stationary energy sectors, including from existing state regulations mandating the use of more fuel-efficient vehicles and requiring that higher percentages of renewable power be provided by electric utilities.

However, a portion of unincorporated Los Angeles County's emissions cannot currently be shown to be fully eliminated by 2045, given existing technology limitations. These remaining emissions, also known as *residual emissions*, include a small amount of natural gas use in buildings as well as emissions from fossil fuel–powered vehicles and off-road equipment, oil and gas industries, manufacturing facilities, landfills, wastewater treatment, fluorinated products, and fertilizer use. Total residual emissions in 2045 are estimated to be approximately 850,000 $MTCO_2e$.
The County expects that new technologies developed over the next 25 years, along with evolving state regulations and financial incentives, will further reduce these residual emissions. The County will continually monitor the state of these technologies and will update the 2045 CAP every five years to adjust policies and programs to take advantage of these advancements.

If residual emissions cannot be eliminated through new technologies or be reduced over time in response to changes in communitywide activities, the County may consider future implementation of carbon removal strategies (such as carbon capture and sequestration and direct air capture), along with future implementation of a carbon offsets/credits program, after the completion of feasibility studies, to achieve carbon neutrality by 2045. Evolving state regulations, programs, and financial incentives will provide new opportunities for the County to counteract any residual emissions. For example, almost $9 billion in carbon capture and sequestration support was included in the $1 trillion Infrastructure Investment and Jobs Act of 2021, which includes funding to establish four direct air capture hubs. As another example, SB 27 of 2001 will provide carbon removal projects via an in-state project registry, which will serve as a database of projects in the state that drive climate action on natural and working lands.



Abbreviations: AFOLU = agriculture, forestry, and other land use; GHG = greenhouse gas; IPPU = industrial processes and product use; $MTCO_2e$ = metric tons of carbon dioxide equivalent

Figure ES-2: Greenhouse Gas Emissions Reduction Path to 2045 Carbon Neutrality and 2045 CAP Targets

CHAPTER 1

Introduction

1.1 Purpose and Scope

There is well-established scientific consensus that human activities are responsible for an increase in heat-trapping greenhouse gas (GHG) emissions in the atmosphere, causing average global temperatures to rise over time. This rise in temperature is changing global climate patterns and increasing the likelihood of weather-related natural disasters, the effects of which are disproportionately felt by the most vulnerable communities in Los Angeles County and worldwide. Climate change has the potential to threaten the safety, public health, economic health, and quality of life of this generation and future generations.

To address climate change and safeguard local communities, in 2006, the State of California adopted Assembly Bill (AB) 32, the Global Warming Solutions Act, which established a statewide goal to achieve 1990 emissions levels by 2020. In turn, local governments throughout the state developed climate action plans (CAPs) to reduce emissions and support the state's goals. In 2015, the County of Los Angeles (County) adopted the *Unincorporated Los Angeles County Community Climate Action Plan 2020* (2020 CCAP) as a component of the Air Quality Element of the *Los Angeles County General Plan 2035* (General Plan) and set a target to reduce emissions in unincorporated Los Angeles County by 11 percent by 2020.

Worldwide, leaders are establishing goals to achieve deep reductions in carbon emissions. In December 2015, world leaders adopted the 2016 Paris Climate Agreement (Paris Agreement), a global action plan to avoid catastrophic impacts of climate change, formalizing their concerted efforts to limit the global average temperature increase to 1.5 degrees Celsius above preindustrial levels. The agreement urged national leaders to join forces with states and local governments to

commit to net zero carbon emissions by 2050. In September 2018, the County Board of Supervisors signed the *We Are Still In* Declaration, affirming the County's continued commitment to uphold the target set by the Paris Agreement. In November 2019, then-Governor Jerry Brown's Executive Order (EO) B-55-18 set a new goal to bring the state to carbon neutrality by 2045, which is five years before the Paris Agreement deadline. In September 2022, Governor Gavin Newsom signed AB 1279, which codified EO B-55-18 by requiring that the State of California achieve net zero GHG emissions no later than 2045, and by requiring the state to reduce direct anthropogenic GHG emissions 85 percent below 1990 levels by 2045. On December 15, 2022, the California Air Resources Board (CARB) adopted the *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), which lays out a path for achieving the statewide goals codified in AB 1279.

This *2045 Los Angeles County Climate Action Plan* (2045 CAP) builds upon these existing and ongoing efforts and focuses on actions to reduce GHG emissions associated with community activities in unincorporated Los Angeles County (**Figure 1-1**). The 2045 CAP, which replaces the 2020 CCAP and sets new targets and goals beyond 2020, ties together existing climate change initiatives and provides a blueprint for deep carbon reductions.

The 2045 CAP achieves unincorporated Los Angeles County's emissions reduction targets for 2030, 2035, and 2045. The 2045 CAP also includes an aspirational goal to achieve carbon neutrality by 2045 to align with the *We Are Still In* Declaration and the State of California's carbon reduction targets and goals.

The 2045 CAP includes a GHG emissions inventory; projections for future emissions; and a road map for addressing emissions from the transportation, stationary energy (used by buildings and other facilities), waste, industrial, agricultural, and land use sectors. GHG emissions reduction strategies, measures, and actions identified in the 2045 CAP will also yield community co-benefits, such as improvements in air quality, public health, mobility, equity, and climate resilience. The 2045 CAP also includes an implementation and monitoring program.

Please note the use of the following terms throughout this document:

- **"Unincorporated Los Angeles County**" refers to the unincorporated areas of Los Angeles County.
- "**Countywide**" refers to Los Angeles County in its entirety, inclusive of both unincorporated areas and all 88 incorporated cities.
- "**County**" refers to County of Los Angeles government.

Strategies are the overall, sector-level goals of the 2045 CAP. These are broad strategies that aim for overarching goals within each emissions sector.

Measures are focused, sub-sector-specific programs and goals that include performance standards that are designed to be quantified for GHG emission reductions.

Actions are the specific policies, programs, or tools that will be implemented to support long-range planning.

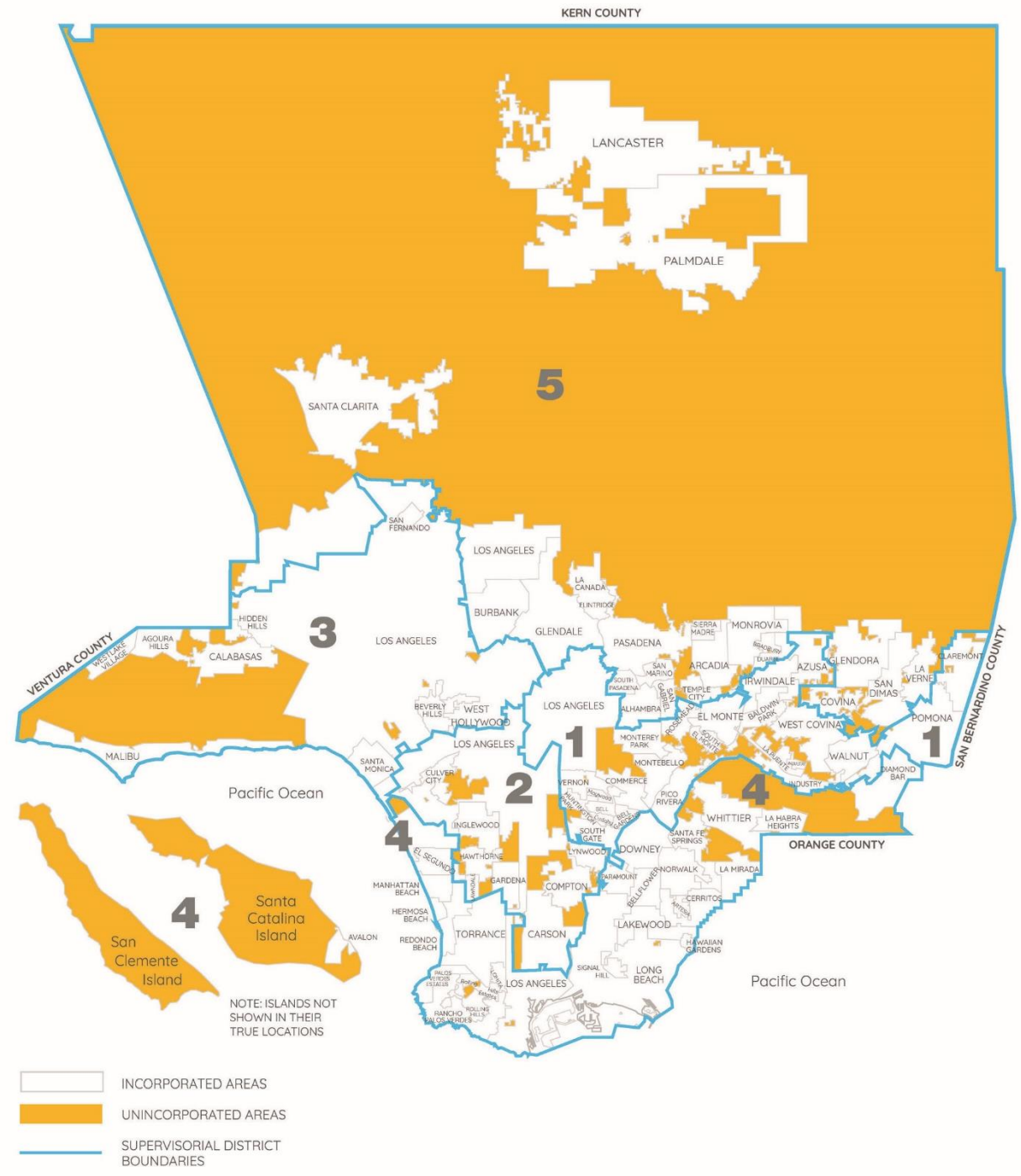


Figure 1-1: Map of Unincorporated Los Angeles County

Using the 2045 Climate Action Plan for CEQA Streamlining

This 2045 CAP can be used to comply with project-level review requirements pursuant to the California Environmental Quality Act (CEQA). The CEQA Guidelines specify that the CEQA evaluation of a project's GHG emissions can be streamlined if the CAP does the following (CEQA Guidelines Section 15183.5):

- Quantifies GHG emissions, both existing and projected, from activities within a defined geographic area over a specified time period.
- Establishes a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
- Identifies and analyzes the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
- Specifies measures or a group of measures, including performance standards, that would collectively achieve the specified emissions level if implemented on a project-by-project basis, as demonstrated by substantial evidence.
- Establishes a mechanism for monitoring the plan's progress toward achieving the target, and requires an amendment if the plan is not achieving specified levels.
- Is adopted in a public process following environmental review.

The 2045 CAP meets the requirements of CEQA Guidelines Section 15183.5 by:

(1) Quantifying all primary sectors of GHG emissions associated with all activities occurring within unincorporated Los Angeles County over which the County has some level of jurisdictional control or influence[1] for 2015 through 2045;

(2) Establishing GHG emissions reduction targets for 2030, 2035, and 2045, below which GHG emissions would not be cumulatively considerable based on the substantial evidence that the 2045 CAP is consistent with the 2022 Scoping Plan, Senate Bill (SB) 32, and AB 1279,[2] as well as an aspirational goal for 2045;

(3) Analyzing community emissions for unincorporated Los Angeles County as a whole and including predicted growth expected by 2045;

(4) Including specific mandatory and voluntary measures that quantitatively achieve the overall reduction targets for 2030, 2035, and 2045, and make progress toward the aspirational goal for 2045;

(5) Including an implementation and monitoring program that contains performance indicators and targets, details regarding funding and financing strategies, a list of available and

[1] The inventories and forecasts include sources over which the County has some level of jurisdictional control or influence (such as building energy use) and exclude those sources over which the County has no jurisdictional control or influence (such as military vehicles and power plants). This is consistent with standard CAP practice and guidance from CARB and California air districts.

[2] Consistency with the 2022 Scoping Plan, SB 32, and AB 1279 is an appropriate metric by which to determine the significance of the 2045 CAP's GHG emissions through 2045. As stipulated by CEQA Guidelines Section 15064.4(b)(3), a lead agency "may consider a project's consistency with the state's long-term climate goals or strategies" when determining the significance of a project's cumulative GHG emissions impacts. Because the 2045 CAP's 2030 and 2045 targets meet or exceed statewide targets, the 2045 CAP's targets represent the level below which GHG emissions would not be cumulatively considerable.

expected funding sources, and a table for monitoring and reporting progress on the measures and their implementing actions; and

(6) Being adopted through a public process in compliance with CEQA.

Projects that incorporate applicable 2045 CAP actions and are consistent with the General Plan can streamline their analysis of GHG impacts without needing a separate quantitative analysis. However, a qualitative checklist-based analysis is still required to demonstrate compliance with the 2045 CAP. To demonstrate consistency with the 2045 CAP, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emissions reduction measures. The project review checklist will be used in one two ways: (1) For projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for a streamlined project-specific CEQA GHG analysis; or (2) for projects required or electing to prepare project-specific CEQA GHG analyses, to demonstrate that all feasible applicable checklist measures or alternative project emissions reduction measures have nevertheless been implemented, either as project features or as GHG mitigation measures. Projects that do not implement all feasible applicable checklist measures or alternative project emissions reduction measures may have significant GHG impacts because they could conflict with an applicable GHG reduction plan per CEQA Guidelines Appendix G, Section VII.

1.2 Climate Change Impacts

This 2045 CAP focuses on reducing GHG emissions. The region, however, is already experiencing the impacts of a changing climate. Furthermore, mitigation and adaptation efforts are interrelated. Taking action to prevent climate change can help reduce the speed and magnitude of climate change impacts on a community. While climate change adaptation is not the primary focus of the 2045 CAP, many GHG emissions reduction strategies in the 2045 CAP also will increase climate resilience. Many climate strategies achieve both mitigation and adaptation benefits. GHG emissions reduction strategies and measures that help increase community resilience to climate change are identified in Chapter 3. Concurrent efforts seek to minimize the impacts of climate change through actions that adapt and prepare communities for climate change.

California's Climate Change Assessment

California's Fourth Climate Change Assessment, released in 2018, highlighted key projected climate impacts on the Los Angeles region, taking into account both low-emissions and high-emissions future scenarios, with the latter containing more extreme impacts that are projected to occur if emissions are not cut substantially.[3] These climate impacts include the following:

- **Warming and Extreme Heat.** Extreme temperatures in the Los Angeles region are expected to increase in both intensity and frequency. Under a higher emissions scenario, the hottest day of the year may be up to 10 degrees Fahrenheit warmer by late in the century. Average maximum daily temperatures are projected to increase around 4–5 degrees Fahrenheit by mid-century and 5–8 degrees Fahrenheit by late in the century.

[3] Governor's Office of Planning and Research, California Energy Commission, and California Natural Resources Agency. n.d. *California's Fourth Climate Assessment: Los Angeles Region Report*. Available: https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf. Accessed in April 2022.

- **Drought and Precipitation.** While average precipitation is projected to change only slightly overall, the dry and wet extremes are projected to increase. This "precipitation whiplash" means that the region is likely to experience drier periods than what the region has historically experienced, followed by much wetter periods with more extreme rain events, potentially leading to increased water scarcity, mudslides, and flooding.
- **Wildfire.** Wildfires are projected to continue to increase in size, frequency, and intensity. Thirteen of the 20 most destructive wildfires in California have occurred in the past five years.[4]
- **Sea Level Rise.** Sea levels are projected to rise roughly 1–2 feet by mid-century and as much as 8–10 feet by the end of the century based on the most extreme projections. Sea level rise can exacerbate the impacts of high tides, storm surges, and heavy precipitation, and can lead to increased coastal flooding.
- **Ocean Acidification.** As levels of atmospheric carbon dioxide (CO_2) increase as a result of human activity such as burning fossil fuels, the amount of CO_2 absorbed by the ocean also increases. When CO_2 is absorbed by seawater, a series of chemical reactions occur, resulting in increased acidity. Ocean acidification can impair the ability of calcifying organisms like corals to build and maintain their shells, skeletons, and other calcium carbonate structures. Since the Industrial Revolution, the acidity of surface ocean waters has increased by 30 percent.[5]

LA County Climate Vulnerability Assessment

The *LA County Climate Vulnerability Assessment* (Climate Vulnerability Assessment) assesses risks and challenges to Los Angeles County from climate change.[6] The assessment builds on the findings of *California's Fourth Climate Change Assessment*, with an emphasis on social vulnerabilities and the dangers of cascading impacts, where harms to one type of infrastructure can affect other facilities or systems, related services, and the people who rely on them. The social vulnerability assessment overlays climate hazard exposure with social sensitivities, such as preexisting health conditions, age, and income, to determine where higher social vulnerability is present, and highlights the inequities in access to resources that help communities adapt to climate change. The physical vulnerability assessment evaluates the climate vulnerability of different physical infrastructure and facilities Countywide, including level of sensitivity to climate hazards and adaptive capacity to respond to hazards. The Climate Vulnerability Assessment highlights key findings related to infrastructure, such as the role of parks in mitigating extreme heat hazards. Energy infrastructure is recognized as one of the physical assets at highest risk from various hazards that include extreme heat, stormwater flooding, and coastal flooding.

In outlining the region's vulnerabilities to climate hazards, the assessment identifies the following high-level measures and actions that the County and community stakeholders can take to increase resiliency and response to climate change.

---

[4] California Department of Forestry and Fire Protection. 2022. Top 20 Most Destructive California Wildfires. Available: https://www.fire.ca.gov/stats-events/. Last updated January 13, 2022. Accessed in January 2022.

[5] National Oceanic and Atmospheric Administration. 2020. Ocean Acidification. Available: https://www.noaa.gov/education/resource-collections/ocean-coasts/ocean-acidification. Last updated April 1, 2020. Accessed in February 2023.

[6] Los Angeles County Chief Sustainability Office. 2021. *LA County Climate Vulnerability Assessment*. October 2021. Available: https://ceo.lacounty.gov/cso-actions/. Accessed in February 2022.

County

- Implement multi-beneficial climate adaptation and mitigation measures that address multiple hazards and prioritize historically disadvantaged communities.
- Collaborate with local and regional jurisdictions to implement a comprehensive climate resilience strategy that addresses area-specific and regional climate vulnerabilities.
- Advocate for equitable legislation and funding to support vulnerable people and places, and climate projects for these communities.
- Inform communities about climate hazards and preparation and mitigation measures.
- Continue research on climate change hazards and risks to eliminate gaps and inform adaptive capacity.

Community Stakeholders

- Support communities' climate planning and adaptation efforts by illuminating needs and gaps.
- Build on information-sharing and awareness of climate issues in communities and for local residents.
- Enhance social connections to build community resilience and adaptive capacity.

1.3 Existing Laws, Regulations, and Policies

Federal and state laws can enable and inform local actions. As such, the 2045 CAP considers applicable federal and state laws (**Table 1-1**) and recognizes that future amendments to measures may be needed to address future federal and state regulations.

Table 1-1: Relevant Federal Laws and Regulations

LEGISLATION / REGULATION	YEAR	DESCRIPTION
Clean Air Act	1970	Established a comprehensive framework for reducing harmful air pollution.
Corporate Average Fuel Economy Standards	1975	Established fuel efficiency standards for passenger cars and light trucks.
Code of Federal Regulations, Title 40, Part 89	1994	Established emissions standards for off-road compression-ignition engines.
Massachusetts v. Environmental Protection Agency	2007	The U.S. Supreme Court ruled that carbon dioxide is an air pollutant under the Clean Air Act and authorized the U.S. Environmental Protection Agency to regulate greenhouse gas emissions.
Phase 2 Heavy-Duty National Program*	2016	Established emissions standards for heavy-duty trucks through model year 2027.

NOTE:

** Portions of Phase 2 were rolled back in July 2018.*

According to the U.S. Environmental Protection Agency, transportation emissions have accounted for the largest portion of U.S. GHG emissions in recent years.[7] Federal climate change legislation has therefore focused on curbing emissions from the transportation sector by regulating fuel consumption standards for light-duty vehicles, and for medium- and heavy-duty trucks and engines. These fuel efficiency standards are defined for new vehicle model years and are regulated under the Clean Air Act and the Corporate Average Fuel Economy program.

Over the past 30 years, the State of California has enacted legislation to address climate change (**Table 1-2**). In 2006, the Global Warming Solutions Act (AB 32) was enacted to address emissions from all sources throughout the state. AB 32 authorized CARB to implement a comprehensive program to achieve the state's targets of reducing GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. By 2016, California met the AB 32 target set for 2020. In the same year, then-Governor Jerry Brown signed SB 32, which established a new 2030 target to reduce GHG emissions by 40 percent below 1990 levels, as established by his EO B-30-15 (2015). In 2018, Governor Brown issued EO B-55-18, establishing a statewide goal to reach carbon neutrality by 2045, and maintain net negative emissions thereafter. In September 2022, Governor Newsom signed AB 1279, which codified EO B-55-18 by requiring that the state achieve net zero GHG emissions no later than 2045 and reduce direct anthropogenic GHG emissions 85 percent below 1990 levels by 2045. In December 2022, CARB adopted the 2022 Scoping Plan, which lays out a path to achieve the statewide goals codified in AB 1279.

Table 1-2: Relevant State Laws, Regulations, and Policies

LEGISLATION / REGULATION	YEAR	DESCRIPTION
Transportation		
AB 1493 Clean Car Standards	2002	Established emissions reduction requirements for new passenger vehicles from 2009 to 2016.
EO S-01-07 Low Carbon Fuel Standard	2007	Established the State of California's Low Carbon Fuel Standard and an emissions reduction target of at least 10 percent of the carbon intensity of the state's transportation fuels by 2020. With the adoption of the 2022 Scoping Plan, the standard has been revised to a reduction of at least 20 percent.
SB 375	2008	Directed the California Air Resources Board to set regional targets for GHG emissions reductions from passenger vehicles.
AB 1493 Amendments	2009	Cemented the state's enforcement of the legislation starting in 2009, while providing vehicle manufacturers with new compliance flexibility.
Advanced Clean Cars Program	2012	Combined the control of smog-causing pollutants and GHG emissions into a single coordinated package of regulations to guide the development of environmentally advanced cars.
Mobile Source Strategy	2016	Described the strategy for transitioning to zero-emission vehicles, or ZEVs, with a goal of 1.5 million ZEVs by 2025 and 4.2 million ZEVs by 2030. The Mobile Source Strategy includes more stringent GHG emissions requirements for light-duty vehicles beyond 2025, and calls for increased deployment of ZEV trucks.
Advanced Clean Cars Update	2017	Affirmed that adopted GHG emissions reduction standards remain appropriate for 2022 through 2025 model years.

[7] U.S. Environmental Protection Agency. 2022. Inventory of U.S. Greenhouse Gas Emissions and Sinks. Available: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. Accessed in February 2022.

Table 1-2: Relevant State Laws, Regulations, and Policies (cont.)

LEGISLATION / REGULATION	YEAR	DESCRIPTION
AB 2127	2018	Requires the CEC, working with CARB and the CPUC, to prepare and biennially update a statewide assessment of the EV charging infrastructure needed to support the levels of EV adoption required for the state to meet its goals of putting at least 5 million ZEVs on California roads by 2030 and reducing emissions of GHGs to 40% below 1990 levels by 2030.
EO B-48-15	2018	Established a statewide goal of at least 5 million ZEVs on state roads by 2030, and installation of 200 hydrogen fueling stations and 250,000 ZEV chargers.
EO N-79-20	2020	Established a target that 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035 and that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 and by 2035 for drayage trucks.
Advanced Clean Cars II Program	2022	Requires that by 2035 all new passenger cars, trucks, and SUVs sold in California will be zero emissions. It amends the Zero-Emission Vehicle Regulation to require an increasing number of ZEVs, and relies on advanced vehicle technologies, including battery-electric, hydrogen fuel cell electric, and plug-in hybrid EVs, to meet air quality and climate change emissions standards. It also amends the Low-Emission Vehicle Regulations to include increasingly stringent standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions while the sector transitions toward 100% electrification by 2035.
Energy		
SB 1078	2002	Required that 20% of electricity retail sales be served by renewable resources by 2017.
CALGreen Code (Title 24, Part 11)	2011	Established the first mandatory green building standards code in the country.
SB 350	2015	Accelerated implementation of SB 1078 and mandated a 50% Renewables Portfolio Standard, or RPS, by 2030. SB 350 includes interim annual RPS targets with three-year compliance periods and requires that 65% of RPS procurement be derived from long-term contracts of 10 or more years.
CALGreen Code Update	2016	Affirmed energy standards for newly constructed buildings, and additions and alterations to existing buildings. Added requirements for demand reductions during critical peak periods and future solar electric and thermal system installations.
SB 100 California Renewables Portfolio Standard Program	2018	Established a goal of supplying 100% of the state's electricity from clean sources by 2045.
SB 596	2021	Requires CARB, by July 1, 2023, to develop a comprehensive strategy for the state's cement sector to achieve net zero emissions of GHGs associated with cement used in California as soon as possible, but no later than December 31, 2045. The law establishes an interim target of 40% below the 2019 average GHG intensity of cement by December 31, 2035.
SB 1020	2022	Adds interim renewable energy and zero-carbon energy retail sales of electricity targets to California end-use customers set at 90% in 2035 and 95% in 2040. It accelerates the timeline required to have 100% renewable energy and zero-carbon energy procured to serve state agencies from the original target year of 2045 to 2035. This law requires each state agency to individually achieve the 100% goal by 2035, with specified requirements.
SB 905	2022	Requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate carbon capture, utilization, or storage and CO_2 removal projects and technology.

Table 1-2: Relevant State Laws, Regulations, and Policies (cont.)

LEGISLATION / REGULATION	YEAR	DESCRIPTION
SB 1137	2022	Prohibits the development of new oil and gas wells or infrastructure in health protection zones, as defined, except for purposes of public health and safety or other limited exceptions. This law requires operators of existing oil and gas wells or infrastructure within health protection zones to undertake specified monitoring, public notice, and nuisance requirements.
SB 1075	2022	Requires CARB, by June 1, 2024, to prepare an evaluation that includes policy recommendations regarding the use of hydrogen, and specifically the use of green hydrogen, in California; a description of strategies supporting hydrogen infrastructure, including identifying policies that promote the reduction of GHGs and short-lived climate pollutants; a description of other forms of hydrogen to achieve emission reductions; and other required elements.
SB 1206	2022	Mandates a stepped sales prohibition on newly produced high-GWP HFCs to transition California's economy toward recycled and reclaimed HFCs for servicing existing HFC-based equipment. This law also requires CARB to develop regulations to increase the adoption of very low-, i.e., GWP <10, and no-GWP technologies in sectors that currently rely on higher-GWP HFCs.
Waste and Water		
AB 341	2011	Required each city, county, and regional agency to develop a source reduction and recycling element of an integrated waste management plan containing specified components, including a source reduction component, a recycling component, and a composting component. With certain exceptions, the source reduction and recycling element of that plan was required to divert 75% of all solid waste from landfill disposal or transformation by 2020, through source reduction, recycling, and composting activities.
AB 1826	2014	Required any business, defined as a commercial or public entity that generates more than 4 cubic yards of commercial solid waste per week or is a multifamily residential dwelling of 5 units or more, to arrange for recycling services.
SB 1383	2016	Established emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants, including methane by 40%, HFC gases by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030.
SB 606 and AB 1668	2018	Required urban and agricultural water suppliers to enact new urban efficiency standards for indoor use, outdoor use, and water lost to leaks.
Agriculture, Forestry, and Other Land Use		
EO N-82-20	2020	Sets a statewide goal to conserve at least 30% of California's land and coastal waters by 2030. This order instructed the CNRA, in consultation with other state agencies, to develop a Natural and Working Lands Climate Smart Strategy that serves as a framework to advance the state's carbon neutrality goal and build climate resilience.
SB 27	2021	Requires the CNRA, in coordination with other state agencies, to establish the Natural and Working Lands Climate Smart Strategy by July 1, 2023. This law also requires CARB to establish specified CO_2 removal targets for 2030 and beyond as part of its 2022 Scoping Plan.
AB 1757	2022	Requires the CNRA, in collaboration with CARB, other state agencies, and an expert advisory committee, to determine by January 1, 2024, a range of targets for natural carbon sequestration, and for nature-based climate solutions, that reduce GHG emissions in 2030, 2038, and 2045. These targets must support state goals to achieve carbon neutrality and foster climate adaptation and resilience.

Table 1-2: Relevant State Laws, Regulations, and Policies (cont.)

LEGISLATION / REGULATION	YEAR	DESCRIPTION
Statewide Emissions Reduction Targets		
EO S-3-05	2005	Established the state's first GHG emissions reductions targets: reduction to 2000 levels by 2010, 1990 levels by 2020, and 80% below 1990 levels by 2050.
AB 32, Global Warming Solutions Act	2006	Codified EO S-3-05's 2020 goal and authorized CARB to implement a comprehensive, multiyear program to reduce GHG emissions from all sources throughout the state.
AB 32 Scoping Plan	2008	Described the long-term road map for achieving the AB 32 target of reducing emissions to 1990 levels by 2020.
SB 535, Greenhouse Gas Reduction Fund and Disadvantaged Communities	2012	Required that 25% of all funds allocated pursuant to an investment plan for the use of state monies collected through a Cap-and-Trade program be allocated to projects that benefit disadvantaged communities, and that at least 10% of these be spent on projects located in disadvantaged communities.
EO B-30-15	2015	Established a GHG emissions reduction target of 40% below 1990 levels by 2030.
SB 32, California Global Warming Solutions Act of 2006: Emissions limit	2016	Codified EO B-30-15's 2030 goal.
2017 Scoping Plan Update	2017	Described the long-term road map for achieving the SB 32 target of reducing emissions by 40% below 1990 levels by 2030.
AB 398, California's Cap-and-Trade Program	2017	Extended the state's Cap-and-Trade Program through 2030, a key strategy for reducing GHGs in the state. The Cap-and-Trade Program sets total allowable emissions for facilities and creates carbon offset credits through carbon sequestration projects.
EO B-55-18	2018	Established a target to achieve carbon neutrality (net zero GHG emissions) by 2045.
AB 1279	2022	Established the policy of the state to achieve net zero GHG emissions as soon as possible, but no later than 2045; to maintain net negative GHG emissions thereafter; and to ensure that by 2045, statewide anthropogenic GHG emissions are reduced at least 85% below 1990 levels.

Abbreviations: 2022 Scoping Plan = 2022 Scoping Plan for Achieving Carbon Neutrality; *AB = Assembly Bill; CALGreen Code = California Green Building Standards Code; CARB = California Air Resources Board; CEC = California Energy Commission; CNRA = California Natural Resources Agency; CO_2 = carbon dioxide; CPUC = California Public Utilities Commission; EO = Executive Order; EV = electric vehicle; GHG = greenhouse gas; GWP = global warming potential; HFC = hydrofluorocarbon; RPS = Renewable Portfolio Standard; SB = Senate Bill; ZEV = zero-emission vehicle*

1.4 County Climate Action Framework

General Plan and 2020 CCAP

The General Plan provides the policy framework and long-range vision for growth in unincorporated Los Angeles County through the year 2035. It establishes goals, policies, and programs to foster healthy, livable, and sustainable communities, and provides a guide for future land use, housing, and economic development. The General Plan includes the Planning Areas Framework, which serves as a mechanism for local communities to develop plans that respond to their unique and diverse characteristics.

In 2015, the 2020 CCAP was adopted as a component of the Air Quality Element of the General Plan. It identified emissions related to community activities, established a 2020 GHG emissions reduction target consistent with AB 32, and established 26 local actions for reductions of GHG

emissions. The 2020 CCAP was the first plan to set GHG emissions reduction goals in unincorporated Los Angeles County, providing a road map for implementing measures to reduce unincorporated Los Angeles County's GHG emissions. The 2020 CCAP addressed emissions from land use, transportation, building energy, water consumption, and waste generation.

This 2045 CAP builds upon the 2020 CCAP by including new emissions reduction targets that address both GHG emissions from General Plan buildout and the projected reductions needed to reach carbon neutrality by 2045, in accordance with the State of California's most recent efforts. The 2045 CAP also integrates the guiding principles from the General Plan to identify tailored climate action opportunities within unincorporated Los Angeles County and to examine potential co-benefits (see Appendix D). These guiding principles include the following objectives:

- Employ smart growth.
- Ensure that community services and infrastructure are sufficient to accommodate growth.
- Provide the foundation for a strong and diverse economy.
- Promote excellence in environmental resource management.
- Provide healthy, livable, and equitable communities.

The 2045 CAP is a policy document intended to reduce communitywide GHG emissions and supports development already allowed under the General Plan's land use assumptions as identified in the Land Use Element and 2021–2029 Housing Element. No changes to General Plan land use designations, zoning, or land use, or specific projects, are proposed as part of the 2045 CAP.

OurCounty Sustainability Plan

In August 2019, the County Board of Supervisors adopted *OurCounty: Los Angeles Countywide Sustainability Plan* (OurCounty Sustainability Plan). The plan includes a bold and cross-cutting set of goals, strategies, actions, and targets for creating a resilient, inclusive, and sustainable Los Angeles County.

The OurCounty Sustainability Plan does not supersede the General Plan. It is a forward-looking strategic framework for creating a more equitable and resilient Los Angeles County in the face of climate change. This 2045 CAP is consistent with the OurCounty Sustainability Plan's visions and goals for the region, but differs in that it is part of the General Plan and focuses on reducing GHG emissions from community activities projected for unincorporated Los Angeles County. Further, the measures identified in the 2045 CAP underwent environmental review pursuant to CEQA.

The 2045 CAP details the GHG emissions reduction vision and goals of the OurCounty Sustainability Plan for unincorporated Los Angeles County and implements the GHG emissions reduction policies of the Air Quality Element of the General Plan. Specifically, the 2045 CAP replaces the existing implementation strategy of the Air Quality Element, known as the 2020 CCAP. As discussed above, the 2045 CAP is a policy document that supports development already allowed under the General Plan's land use assumptions as identified in the Land Use Element and 2021–2029 Housing Element. No changes to General Plan land use designations, zoning, or land use specific projects are proposed as part of the 2045 CAP.

Appendix C provides a summary of the strategies and actions in the OurCounty Sustainability Plan that align most closely with the 2045 CAP.

1.5 County Leadership on Climate Action

Achieving carbon neutrality requires large-scale transformations extending well beyond the borders of unincorporated Los Angeles County. While the 2045 CAP is focused on reducing community emissions, the County must take a strong leadership role and build partnerships that will be necessary to realize deep carbon reductions across sectors and geographies.

Appendix C, *Prior and Current County Actions on Climate Change*, summarizes past and current actions by the County on climate change, focusing on key achievements over the past 10–15 years. Section 3.3, *Strategies, Measures, and Actions*, summarizes within each sector recent climate actions initiated by the County to reduce emissions from municipal operations or catalyze community change to facilitate emissions reductions.

1.6 Climate Equity

The 2045 CAP is intended to be inclusive, accessible, and meaningful and prioritizes frontline communities, which are Black, Indigenous, and People of Color (BIPOC) and low-income households that have historically experienced a disproportionately high share of environmental impacts.

The County is committed to actively promoting equity throughout its policies and practices. The County's Racial Equity Strategic Plan provides a multi-dimensional definition of equity that includes:[8]

Procedural equity refers to fair, transparent, and inclusive processes that lead to more just outcomes and opportunities for individuals impacted by inequity. Procedural equity can be achieved through processes that acknowledge power imbalances across stakeholders and aim to rectify them by recognizing diverse forms of power and expertise, namely expertise from lived experiences—integral to informing more equitable and effective public decision-making.

Distributional equity is the most understood form of equity, achieved through fair allocation of resources such as goods and services, as well as societal benefits and burdens.

Structural equity addresses the root causes of inequities including underlying systemic structures, policies, societal norms, and practices that contribute towards disparate population-level outcomes.

Climate equity overlays these definitions of equity with social vulnerabilities specific to climate change. This includes the communities that are most likely to be harmed by climate impacts, as well as those most likely to be left out of the benefits of a transition to a carbon-free economy. This 2045 CAP refers to these as "frontline communities."

[8] For more information, see https://ceo.lacounty.gov/racial-equity-strategic-plan/

The definition of "frontline community" can change based on the specific public policy, plan, or action being considered. In unincorporated Los Angeles County, frontline communities are in areas with the worst air and soil pollution and traffic congestion, with the least open space and smallest number of trees, and they are exposed to particulate matter from living near major freeways, ports, and industry. These communities also have the least access to nature, healthy food, and health care and suffer elevated rates of heart disease, asthma, and premature death, as well as reduced access to economic opportunities. Frontline communities could also include tribal communities, as well as other low-income households in rural and remote areas with limited access to resources and high exposure to fire and other hazards. Frontline communities are inequitably bearing the greatest burden of the climate crisis.

Because frontline communities also have fewer resources to prevent, adapt, or recover from climate disasters, the County prioritizes strategies that both invest in and support these communities. These strategies include providing specific incentives and subsidies for affordable housing developments, implementing building decarbonization measures in multifamily buildings and low-income housing, and implementing other initiatives as discussed below.

Climate Equity Guiding Principles

The level of planning, policy change, and investment needed to implement climate action strategies creates an opportunity for the County to integrate equity in ways that help reverse the trends of discrimination and disinvestment. Doing that will require deliberate effort to build procedural, distributional, and structural equity. These climate equity guiding principles, summarized in **Figure 1-2**, ensure that frontline communities are prioritized and engaged with for resource and funding allocation.

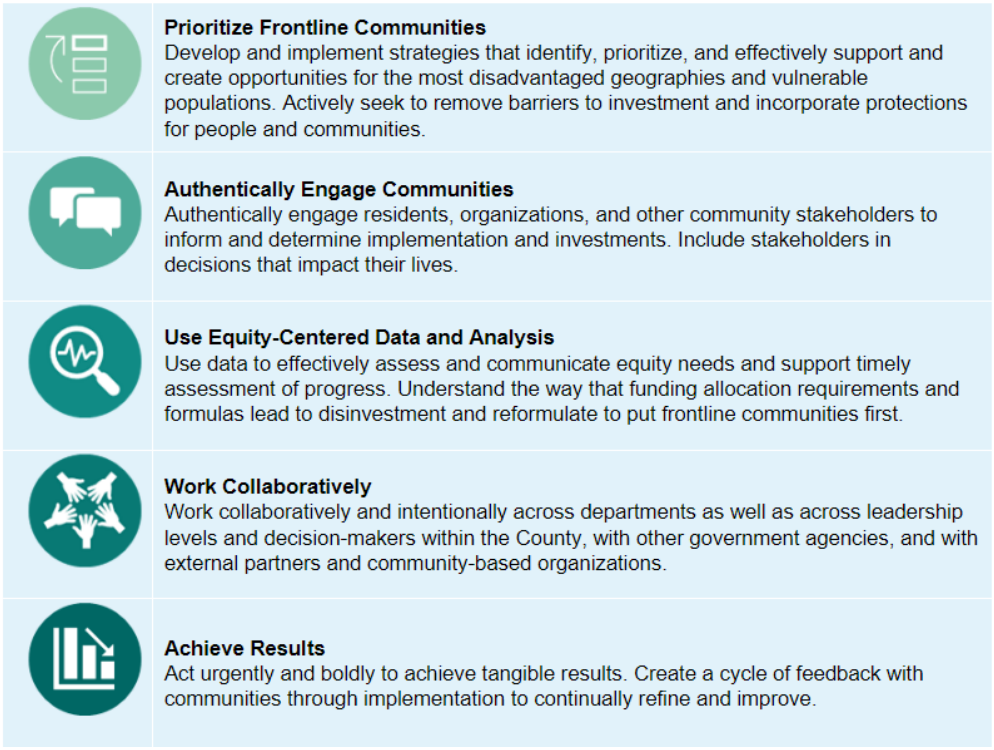


Figure 1-2: Climate Equity Guiding Principles

Equity Approach

An approach was developed to promote and prioritize equity based on the climate equity guiding principles to provide a pathway to successful implementation of the 2045 CAP. Transparency, engagement, and early action are the primary themes.

The equity approach illustrated below will help the County to communicate the climate threats that frontline communities face, confront the barriers that frontline communities encounter in terms of traditional public investment, and support pathways toward equitable and transformative implementation of climate strategies. Collaboration with frontline communities will follow the process depicted in **Figure 1-3**.

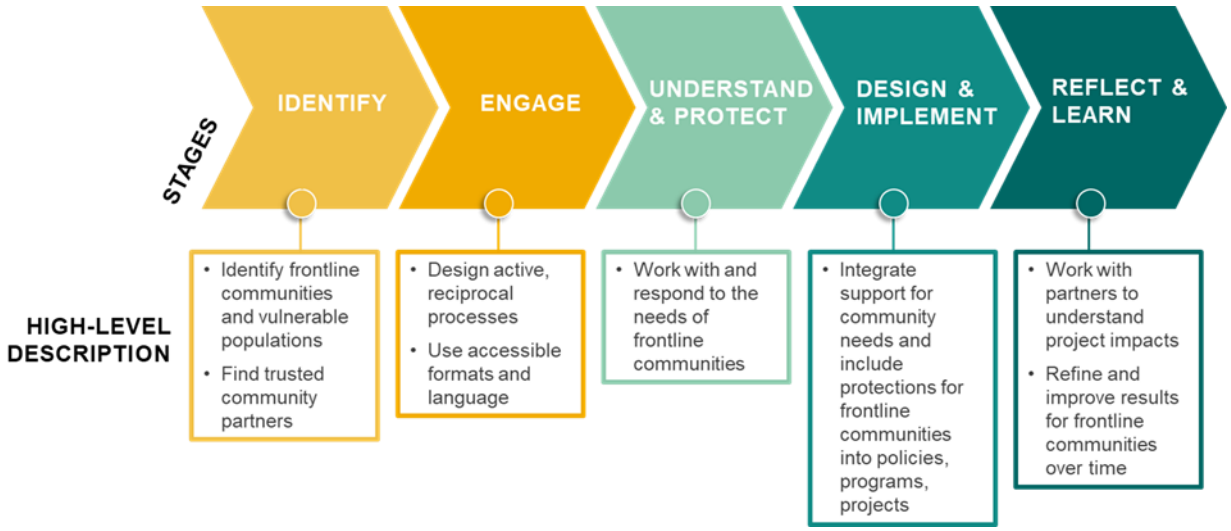


Figure 1-3: Integrating Equity into 2045 CAP Implementation

Engagement is an ongoing conversation that must happen to align 2045 CAP programs with community needs throughout the stages of planning, design, implementation, monitoring, and performance. Engagement includes time for post-project reflection and learning so that all parties can collectively and continually improve in meeting community needs.

Identify Frontline Communities

The County will identify frontline communities to prioritize additional resources to support the implementation of 2045 CAP actions. Available data sets, such as the SB 535 Disadvantaged Communities map, the federal government's Climate and Economic Justice Screening Tool, the County's Climate Vulnerability Assessment, CalEnviroScreen, and the County's Equity Indicators Tool will be used to identify frontline communities.

Using multiple data sets will allow for increased eligibility of grant funding when made available. The State of California designated "Disadvantaged Communities" to invest proceeds from the Cap-and-Trade Program in these communities that will help improve public health and quality of life by reducing GHG emissions. Having the frontline communities in unincorporated Los Angeles County align with the SB 535 Disadvantaged Communities designation will ensure that funding from the state's Cap-and-Trade Program can be used to implement the County's 2045 CAP actions. More information on SB 535 Disadvantaged Communities can be found here: https://oehha.ca.gov/calenviroscreen/sb535.

The Climate and Economic Justice Screening Tool was developed by the federal government in response to EO 14008. The purpose of the tool is to help identify both urban and rural disadvantaged communities and provide information for the Justice40 Initiative. The Justice40 Initiative will deliver at least 40 percent of the overall benefits from federal investments in climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, pollution remediation, and clean water infrastructure to disadvantaged communities. More information on the Justice40 Initiative can be found here: https://www.whitehouse.gov/environmentaljustice/justice40/.

Engage Communities and Build Capacity

The County is committed to building a meaningful and reciprocal relationship with partners in frontline communities, and to implementing community engagement processes for all climate projects. This requires meeting people where they are, in formats that enable active dialogue and participation. Community engagement will be facilitated with inclusive language access strategies.

Community engagement can help create a feedback loop with frontline communities that provides qualitative data for monitoring and implementation purposes and for informing the next CAP update. Engaging with community-based organizations (CBOs) will be a vital part of the community engagement process because CBOs are well-rooted in the communities they serve and provide a channel of communication between the communities and the County.

In addition, conversations with local tribes will be held to start a dialogue on how climate change is affecting native and indigenous communities and what the County can do to support equitable implementation of CAP actions. Early consultations beyond what is minimally required by AB 52 and SB 18 will allow tribes to provide input during the planning phase of an implementation action.

Provide a Just Transition

A just transition to clean energy is imperative to minimize impacts on the economy while maximizing opportunities for the workforce to transition to clean energy jobs. The vision for a just transition for unincorporated Los Angeles County must be defined in partnership with the people whose lives and livelihoods are most affected. Although the net result of a transition away from fossil fuels will likely be a net gain in total jobs given the level of capital investment, the types of jobs will shift. That can have real consequences on people in many different fields, from electrical workers working in power plants to plumbers installing heating, ventilation, and air conditioning systems in homes; the challenges will vary. This may be particularly challenging for older workers compared to those just entering the workforce. The County cannot address all of these challenges on its own, but it can commit to becoming an active partner in supporting workers during this transition.

The Los Angeles Just Transition Strategy report was developed with a task force that included frontline and tribal communities, industry representatives, labor organizations, and workforce

development partners.[9] The report includes goals, strategies, and actions to ensure a just transition for workers and communities affected by the phase-out of oil drilling and extraction activities.

Incorporate Anti-Displacement

The climate crisis is urgent and requires immediate action; however, the County is also facing a housing crisis, with too many people unhoused, and too many people overburdened by high housing costs. Although it may be tempting to try to solve these issues separately, they are in fact deeply intertwined. Frontline communities are likely to be affected by extreme-weather events and have fewer resources to recover and adapt. Leaving them out of policies and programs to decarbonize will perpetuate the cycles of disinvestment that underlie and exacerbate existing disparities.[10]

Affordable housing is the most complicated and vulnerable building sector. Providers often compile funding sources from multiple lenders, each with their own financial requirements and expectations. Cash flows are limited and providers may have limited access to additional capital to make improvements. As a result, many buildings have significant backlogs of deferred maintenance. At the same time, residents of these buildings often have limited housing options that they can afford. The concerns range from landowners possibly passing the cost of improvements to tenants to increased property assessments that result from improvements. Displacement of residents is a concern as improvements and retrofits are made to the building stock.

Decarbonizing buildings through efficiency and electrification will take up-front investment. As part of a larger effort to stem displacement of vulnerable populations, the Housing Element includes Program 43, which will assess displacement and gentrification risk through a displacement risk study. The data will be presented through an anti-displacement mapping tool to ensure that the most current information is available as anti-displacement efforts are implemented. The anti-displacement mapping tool will help to inform the implementation of CAP actions in communities that are already vulnerable to displacement or gentrification. Equity strategies may include the use of grant programs to prevent passing the costs on to tenants, protection of tenants from harassment or from displacement due to construction and other illegal eviction processes, and additional public engagement to clarify any misconception of property assessments.

The anti-displacement solution will require more than leaving affordable housing and frontline communities out through exemptions. Leaving some communities out perpetuates cycles of disinvestment. As other buildings are transitioned, frontline communities and affordable housing would be left behind and not enjoy the benefits of decarbonization, such as lower energy costs and healthier indoor air, and eventually could lead to stranded assets as buildings would remain reliant on a diminishing natural gas infrastructure. The County will look beyond exemptions and

[9] Los Angeles County. 2022. *Los Angeles Just Transition Strategy*. December 2022. Available: https://assets-us-01.kc-usercontent.com/0234f496-d2b7-00b6-17a4-b43e949b70a2/d2ade00b-66cc-4da1-8a01-7f9d72ee7b5d/LA%20County-City%20Just%20Transition%20Strategy_FINAL%2012.5.22.pdf. Accessed February 2023.

[10] City of Los Angeles. 2023. LACityClerk Connect: Council File 21-1463, “Community Assemblies/Climate Emergency Mobilization Office/Building Decarbonization/L.A.s Green New Deal.” Available: https://cityclerk.lacity.org/lacityclerkconnect/index.cfm?fa=ccfi.viewrecord&cfnumber=21-1463. Last changed January 13, 2023.

work with partners to design policies and programs that support frontline communities, protect tenants, and prioritize public subsidies to maintain housing affordability.

Consider Rural and Remote Communities

Rural and remote communities often face different issues than their more urban counterparts related to infrastructure and buildings. Communities along the wildland/urban interface and those surrounded by natural areas have higher fire exposure and may experience more outages as a result of Public Safety Power Shutdowns. These issues are of particular concern for vulnerable populations, such as people who rely on electricity for medical issues, elderly people who may have a hard time evacuating, or low-income communities that may not be able to afford housing elsewhere. Rural populations will be included in stakeholder engagement processes for the CAP to enable potential issues and strategies to surface.

Deliver Support to Frontline Communities

The County will conduct studies for many 2045 CAP measures and actions to identify priority areas for implementation, physical infrastructure needs, regulatory and legal requirements, up-front and ongoing costs, barriers and obstacles, and needed partnerships.

Historically, frontline communities have had challenges accessing incentives for energy retrofit initiatives. A key challenge is the use of rebates, which reimburse energy customers after retrofits have been completed. Rebates and other program delivery mechanisms that require complex applications and out-of-pocket investment make it difficult for energy customers who are already financially burdened. It will be a priority of the County to provide a grant program in place of the traditional rebate programs for frontline communities. A grant program to fund energy retrofits will allow frontline communities to take advantage of the benefits from the beginning of the process. The grant program can also include services, labor, and supplies provided by the County. The goal is to support bringing the benefits of decarbonization to frontline communities without burdening vulnerable people with upfront costs.

Develop a Monitoring and Reporting Mechanism

A monitoring and reporting mechanism will be developed to track the overall implementation of the 2045 CAP and monitor the rate of implementation in frontline communities. A robust data collection system involving all lead and partner departments will be developed to provide the information necessary for monitoring. The monitoring program will inform which actions to prioritize and allocate additional funding to, especially for frontline communities. The data collected will be used to analyze factors such as areas of implementation, progress of CAP actions, funding availability and allocation, and comparative rate of implementation. See Appendix E for the performance objectives, tracking metrics, and potential funding sources included in the monitoring program.

This information will be reported on the County's website and released annually as part of the General Plan Progress Report. The County's Climate Action website (https://planning.lacounty.gov/climate) will include a dashboard displaying the most current updates on the implementation of the 2045 CAP actions in frontline communities. The dashboard will contain information that members of the public can use to track progress and provide feedback on adjustments needed to meet the 2045 CAP Equity Guiding Principles.

1.7 Energy Resilience

Although the 2045 CAP is focused on reducing GHG emissions, action must be taken in the context of climate adaptation and resilience. Safe and thriving communities require a reliable, affordable source of clean energy. The shift toward electrifying buildings and vehicles, and the increase in temperatures caused by climate change, will mean increased demand on the electricity grid. At the same time, energy infrastructure is vulnerable to increased climate-driven extreme events including fires, heat, and floods. Providing reliable energy while moving away from fossil fuels in buildings and transportation will take planning, investment, and collaboration. Efforts are needed across California to increase renewable energy supply and prepare the grid. The County will work in collaboration with multiple partners on implementation.

It is important to note that climate impacts on the grid will happen whether decarbonization takes place or not. Southern California Edison (SCE) has released a Climate Adaptation and Vulnerability Assessment to evaluate grid vulnerability.[11] Climate change is not a far-off possibility—it is happening now, with devastating consequences.[12] Frontline communities again are bearing the greatest burden. Adaptation is needed to prepare the grid at the same time and with the same urgency as reducing emissions to limit the impacts of climate change. The potential cost of doing nothing on either front far exceeds the cost of action.[13] These issues must be addressed in tandem to have the greatest value.

The energy transition includes not only a shift in energy sources, but also a shift in where and when energy is generated and how it is used and managed. This requires rethinking the energy grid to move away from a centralized system dominated by large-scale fossil fuel-based power plants with a one-way flow of energy from source to customers. Instead, the grid is becoming increasingly decentralized, distributed, localized, and network-based. Over time, this will enable greater energy resilience because the system will be able to respond and adapt to local conditions in a more precise way, limiting large-scale disruptions.

[11] Southern California Edison. 2023. Climate Adaptation. Available: https://www.sce.com/about-us/environment/climate-adaptation. Accessed February 2023.

[12] Intergovernmental Panel on Climate Change. 2022. *Summary for Policy Makers*. Section B: Observed and Projected Impacts and Risks. Available: https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf. Accessed February 2023.

[13] Deloitte. 2023. Carbon-Proofing the Grid: Increasing Renewables and Resilience. February 24, 2023. Available: https://www2.deloitte.com/us/en/insights/industry/power-and-utilities/carbon-proofing-strategies.html. Accessed February 2023.

CHAPTER 2

GHG Emissions Inventory, Forecasts, and Reduction Targets

2.1 Community GHG Emissions Inventory

The 2015 GHG emissions inventory for unincorporated Los Angeles County forms the baseline inventory for the 2045 CAP. The year 2015 was selected as the emissions baseline for the 2045 CAP because of the availability in that year of the most recent, reliable, accurate, and complete emissions activity data that were available when the OurCounty Sustainability Plan was prepared. The 2015 GHG emissions inventory is compliant with the *Global Protocol for Community-Scale Greenhouse Gas Inventories*, which accounts for communitywide GHG emissions in line with 2006 Intergovernmental Panel on Climate Change guidelines for national GHG inventories. The inventory accounts for the CO_2 equivalence of seven gases: CO_2, methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. These emissions are organized into five sectors, based on the activity type or source:

- **Transportation:** The transportation sector accounts for emissions from fuel combustion and electricity consumption from passenger vehicles, goods movement, public transit systems (including bus and rail), and off-road vehicles.
- **Stationary Energy:** The stationary energy sector includes emissions from energy use in buildings, facilities, and stationary (off-road) equipment. Emissions from fossil fuel combustion at on-site and off-site energy generation facilities, fossil fuel extraction, and fugitive emissions released from oil and natural gas systems are reported for this sector.
- **Waste:** The waste sector accounts for emissions generated at landfills, biological treatment (composting and anaerobic digestion), and wastewater treatment plants.

- **Industrial Processes and Product Use (IPPU):** Emissions from non-energy industrial activities and use of products like refrigerants, foams, aerosols, and alternatives to ozone-depleting substances, among other fossil fuel-based solvents, are reported under IPPU.
- **Agriculture, Forestry, and Other Land Use (AFOLU):** The AFOLU sector accounts for land-related emissions (and removals). Land-use changes, agriculture, forestry, and aggregate sources (including wildfires, biomass burning, and fertilizer use) are reported for this sector.

The community-scale GHG emissions inventories for unincorporated Los Angeles County were developed using the *Global Protocol for Community-Scale Greenhouse Gas Inventories*.[14] This protocol is used for calculating and reporting emissions from community activities and sources from seven gases: CO_2, methane, nitrous oxide, HFCs, perfluorocarbons, hexafluoride, and nitrogen trifluoride. The inventories include the following emissions:

- Emissions produced from activities and sources within the boundaries of unincorporated Los Angeles County (Scope 1).
- Emissions generated from the use of grid-supplied electricity, heat, steam, and/or cooling within the boundaries of unincorporated Los Angeles County (Scope 2).
- Emissions occurring outside the boundaries of unincorporated Los Angeles County as a result of activities taking place within the boundaries of unincorporated Los Angeles County (Scope 3).

The GHG inventories comprise emissions from activities occurring within unincorporated Los Angeles County areas, including emissions that occur elsewhere because of those activities. A good example is solid waste, which is generated locally but disposed of at a landfill outside the jurisdiction, where it decomposes and generates GHGs. Solid waste is a Scope 3 emissions source.

It should also be noted that the Los Angeles County Sanitation Districts has prepared a separate GHG inventory using site-specific data rather than population-based estimates, which were used for certain sources in the 2045 CAP's 2015 and 2018 inventories.[15,16] The County and the Los Angeles County Sanitation Districts will work cooperatively to achieve carbon neutrality.

In 2015, emissions generated by community activities occurring in unincorporated Los Angeles County amounted to 5.5 million metric tons CO_2 equivalent ($MTCO_2e$).[17] The transportation and stationary energy sectors were the largest contributors to the inventory. The transportation sector accounts for approximately 2.8 million $MTCO_2e$ (51 percent) of total GHG emissions, while the

[14] World Resources Institute, C40 Cities Climate Leadership Group, and ICLEI – Local Governments for Sustainability. 2014. *Global Protocol for Community-Scale Greenhouse Gas Inventories*, Version 1.1. December 2014. Available: https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities. Accessed in January 2021.

[15] Los Angeles County Sanitation Districts. 2022. *2021 Greenhouse Gas Inventory Report*.

[16] Environmental Science Associates. 2022. P*ositive Verification Opinion for Greenhouse Gas Emissions and Reductions for Emissions Year 2021*.

[17] The 2015 GHG emissions inventory for the unincorporated Los Angeles County is adapted from the Countywide 2015 Community GHG Inventory prepared for the OurCounty Sustainability Plan. Per the OurCounty Sustainability Plan, 2015 emissions from unincorporated Los Angeles County amounted to 9.5 million $MTCO_2e$. The CAP accounts for emissions from all the sectors and subsectors reported in the OurCounty Sustainability Plan and includes additional community activities for unincorporated Los Angeles County (including off-road equipment, buses, and product use emissions, as detailed in Appendix A.1). However, due to updated activity data, emission factors, and modeling protocols, the 2045 CAP reports significantly lower emissions for 2015 (5.5 million $MTCO_2e$).

stationary energy sector accounts for approximately 1.9 million $MTCO_2e$ (35 percent) of total GHG emissions. The transportation sector includes emissions from on-road passenger vehicles, trucks, and railways. The stationary energy sector includes emissions from residential, commercial, and institutional uses; industrial buildings; and stationary equipment. The remaining emissions sources include waste and wastewater (8 percent), refrigerants and other industrial products (5 percent), and other land-related activities including forestry and agriculture (1 percent).

To capture the latest emissions profile and emissions trends in Los Angeles County since 2015, the County prepared an updated inventory for the year 2018, given the availability in that year of the most recent complete data set of emissions-generating activity. The 2018 inventory relies on the same protocol and data sources that were used in the 2015 GHG emissions inventory. In 2018, communitywide emissions totaled nearly 5.2 million $MTCO_2e$. The transportation sector was the greatest contributor, accounting for 52 percent of emissions and 2.7 million $MTCO_2e$. The stationary energy sector was the second greatest contributor at 33 percent and 1.7 million $MTCO_2e$. The remaining emissions were generated by the waste (9 percent), IPPU (5 percent), and AFOLU (1 percent) sectors.

Total GHG emissions decreased approximately 7 percent between 2015 and 2018. The stationary energy sector saw the greatest decrease (11 percent), followed by the IPPU sector (6 percent) and the transportation sector (5 percent).[18] Emissions from stationary energy decreased primarily because of the increasing level of renewable energy supplied by SCE into the electricity grid, and because certain power-generating facilities reduced their fossil fuel combustion in the intervening years. Emissions from transportation decreased primarily because of vehicle turnover to more fuel-efficient vehicles. **Table 2-1** and **Figure 2-1** show the 2015 and 2018 emissions breakdowns by sector and sub-sector. (See Appendix A for more detail on the inventories.)

[18] This decrease is attributable to declining emissions factors from the CARB EMissions FACtors 2021 (EMFAC2021) model, which outpace the increase in total vehicle miles traveled (VMT) as modeled with the Southern California Association of Governments' (SCAG's) 2016 Regional Travel Demand Model. According to the California Department of Tax and Fee Administration, statewide taxable sales of gasoline and diesel fuel increased by 2 percent from 2015 to 2018. Statewide gasoline and diesel fuel sales may not trend precisely with unincorporated Los Angeles County gasoline and diesel fuel sales, and VMT apportioned to areas in unincorporated Los Angeles County may not correlate perfectly with gasoline sales, which could explain this difference. For additional discussion, see Appendix A.

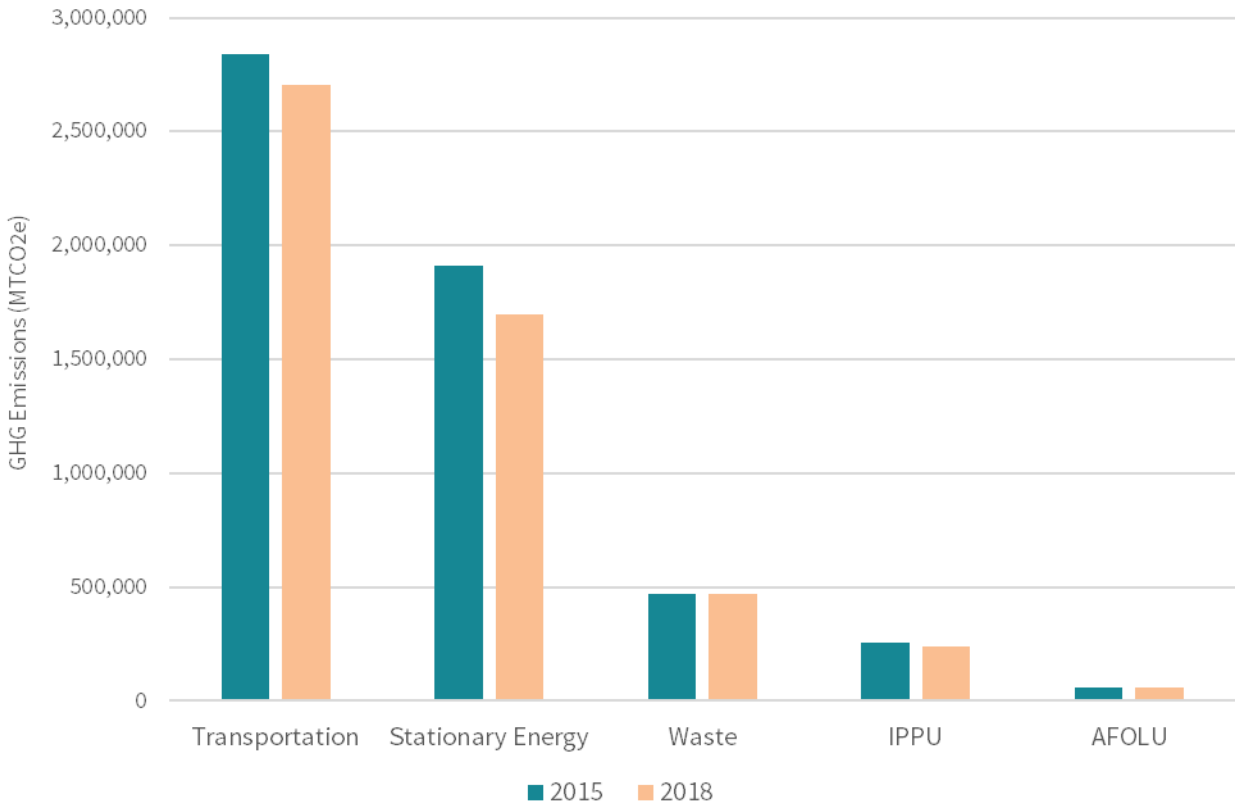


Figure 2-1: 2015 and 2018 Greenhouse Gas Emissions by Sector

Source: Appendix A: Greenhouse Gas Accounting, Business-as-Usual Forecast, and Emission Reduction Targets.

Table 2-1: 2015 and 2018 Greenhouse Gas Emissions by Sector and Sub-sector

SECTOR / SUB-SECTOR	ANNUAL GHG EMISSIONS ($MTCO_2e$) 2015	2018
Transportation	**2,838,133**	**2,704,685**
On-Road Transportation	2,828,720	2,695,195
Railways	9,413	9,490
Stationary Energy	**1,908,637**	**1,698,809**
Residential Buildings	1,030,285	962,743
Commercial and Institutional Buildings	386,753	349,373
Manufacturing and Construction	309,449	244,417
Energy Industries	121,252	98,554
Fugitive Emissions from Oil and Natural Gas Systems	58,222	41,066
Agricultural Off-Road Equipment	2,675	2,658
Waste	**469,997**	**469,382**
Solid Waste Disposal	404,604	407,578
Biological Treatment of Solid Waste	10,214	5,309
Wastewater Treatment	55,179	56,495
IPPU	**253,529**	**239,505**
Product Use	253,529	239,505
AFOLU	**60,860**	**60,860**
Aggregate Sources and Non-CO_2 Emissions Sources	25,048	25,048
Land-use Change	35,811	35,811
TOTAL	**5,531,155**	**5,173,240**

Abbreviations: AFOLU = Agriculture, Forestry, and Other Land Use; CO_2 = carbon dioxide; GHG = greenhouse gas; IPPU = Industrial Processes and Product Use; $MTCO_2e$ = metric tons of carbon dioxide equivalent
Note: Totals may not add precisely due to rounding.
Source: Appendix A: Greenhouse Gas Accounting, Business-as-Usual Forecast, and Emission Reduction Targets.

2.2 Emissions Forecasts

The emissions forecasts used in the 2045 CAP account for socioeconomic trends, population growth, historic emissions patterns, and existing policies and legislation that affect GHG emissions. **Figure 2-2** shows population and employment growth projections from 2015 to 2045 for unincorporated Los Angeles County. The 2018 GHG emissions inventory serves as the year from which future emissions are forecasted. Note that the 2045 CAP's baseline year for target setting is 2015; 2018 is just the most recent GHG emissions inventory conducted by the County and was therefore used to forecast emissions.

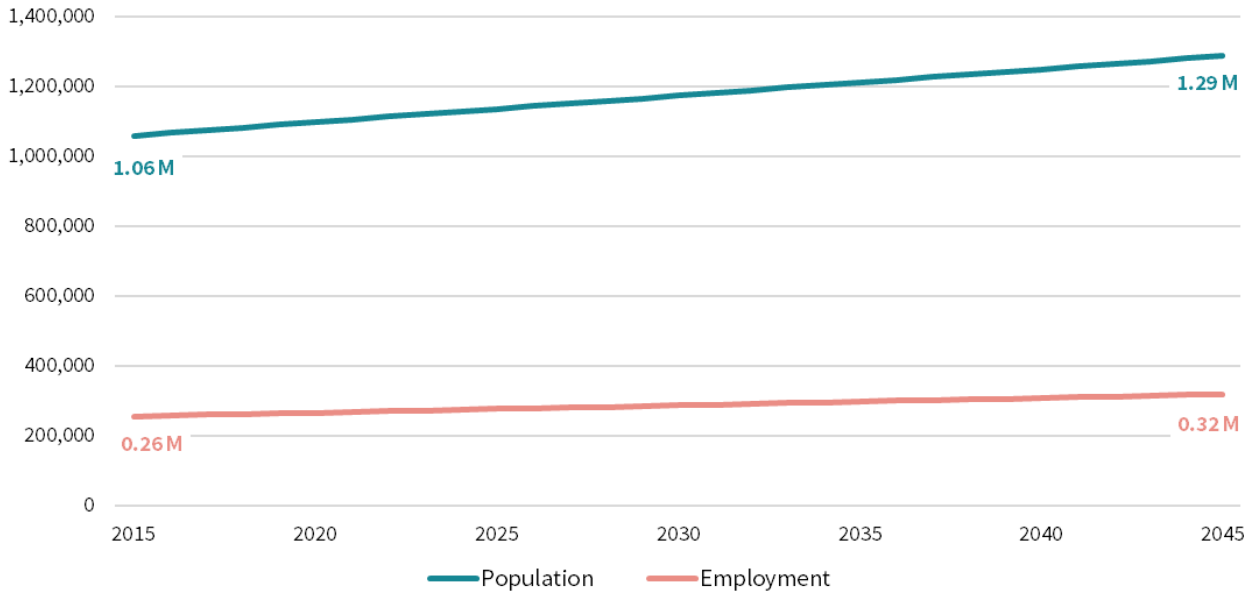


Figure 2-2: Population and Employment Growth in Unincorporated Los Angeles County[19]

Business-as-Usual Forecast

Forecasts were developed by sector under a business-as-usual (BAU) scenario for the years 2019 through 2045 (**Figure 2-3**). The BAU forecast assumes that no further government action is taken to reduce GHG emissions and is consistent with the following:

- Population projections by the Southern California Association of Governments (SCAG) to 2040, used in SCAG's 2016 Regional Transportation Model.[20]
- Building demolition and construction rates from building area data obtained from the County's Office of the Assessor.
- Passenger vehicle and truck vehicle miles traveled (VMT) and emissions estimated using the SCAG's 2016 Regional Travel Demand Model and CARB's EMissions FACtors 2021 (EMFAC2021) model.

[19] Southern California Association of Governments. 2016. *The 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*. April 2016 model. Accessed by Fehr and Peers in July 2019.
[20] The General Plan uses the 2008 Regional Transportation Model.

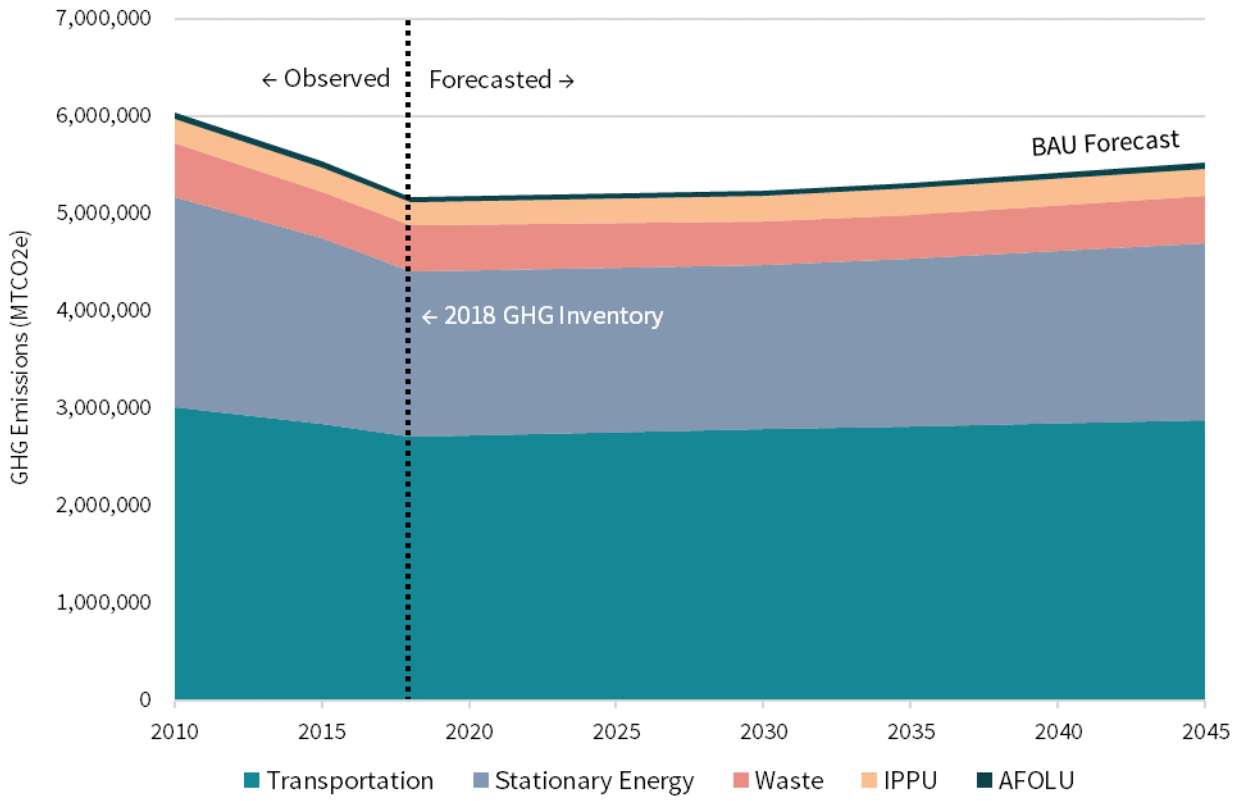


Figure 2-3: Forecast of 2045 Business-as-Usual Greenhouse Gas Emissions
Source: Appendix A: Greenhouse Gas Accounting, Business-as-Usual Forecast, and Emission Reduction Targets.

Adjusted Business-as-Usual Forecast

The Adjusted BAU forecast accounts for future growth under BAU conditions but makes adjustments for federal, state, and County regulations that were implemented before development of the 2045 CAP. The Adjusted BAU forecast assumes that population, housing, employment, and transportation activities would continue to grow over time, consistent with the projections shown in Figure 2-2.

The Adjusted BAU forecast also accounts for existing standards and regulations, such as the California Energy Commission (CEC) 2019 and 2022 Title 24 building energy efficiency requirements, Renewables Portfolio Standards (SB 100), the California Department of Resources Recycling and Recovery (CalRecycle) 75 percent waste diversion initiative (AB 341), Pavley and Advanced Clean Car Standards (AB 1493), and Low Carbon Fuel Standards (EO S-01-07). Furthermore, some existing GHG emissions reduction commitments by County agencies and select strategies from the 2020 CCAP and OurCounty Sustainability Plan are also incorporated into the Adjusted BAU forecast, such as decommissioning of the Pitchess Cogeneration facility and the County's fleet purchases of zero-emission vehicles (ZEVs).

Table 2-2 shows the projected total emissions for each target year under the Adjusted BAU forecast. Total emissions for unincorporated Los Angeles County are forecasted to decline from 5.5 million $MTCO_2e$ in 2015 to 3.8 million $MTCO_2e$ by 2045, a 31 percent reduction. The table

also shows the forecasts by each major sector. **Figure 2-4** compares the Adjusted BAU forecast to the BAU forecast.

Table 2-2: Forecasts of Adjusted Business-as-Usual Greenhouse Gas Emissions

	ANNUAL GHG EMISSIONS ($MTCO_2e$)				
SECTOR	2015	2018	2030	2035	2045
Transportation	2,838,133	2,704,685	2,205,885	2,080,234	1,993,281
Stationary Energy	1,908,637	1,698,809	1,502,306	1,341,401	1,018,793
Waste	469,997	469,382	451,919	454,097	482,489
IPPU	253,529	239,505	259,605	267,981	284,731
AFOLU	60,860	60,860	60,860	60,860	60,860
TOTAL	**5,531,155**	**5,173,240**	**4,480,574**	**4,204,572**	**3,840,154**

Abbreviations: AFOLU = Agriculture, Forestry, and Other Land Use; GHG = greenhouse gas; IPPU = Industrial Processes and Product Use; $MTCO_2e$ = metric tons of carbon dioxide equivalent
Source: Appendix B: Emissions Forecasting and Reduction Methods.

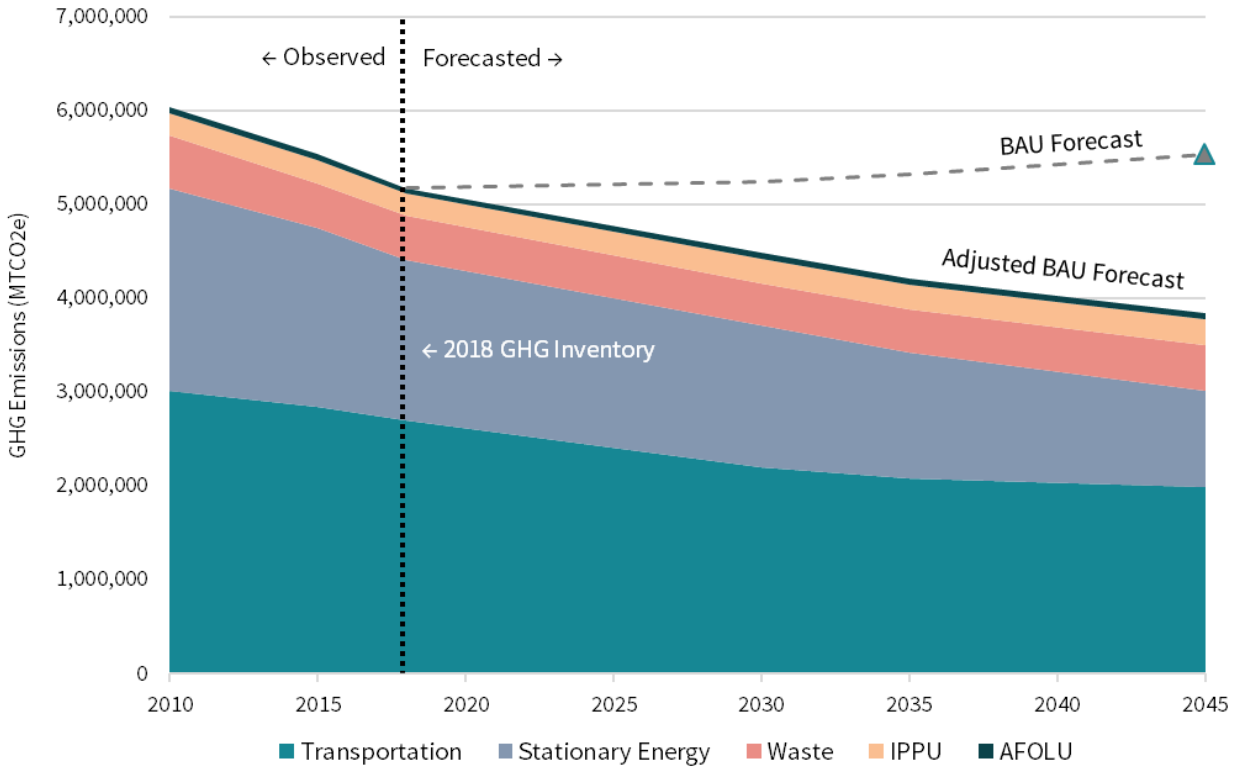


Figure 2-4: Forecast of 2045 Adjusted Business-as-Usual Greenhouse Gas Emissions
Source: Appendix B: Emissions Forecasting and Reduction Methods.

2.3 Emissions Targets

Over the past two decades, the State of California has established multiple GHG emissions reduction targets between 1990 and 2050 to address various aspects of climate change. AB 32 and SB 32 codified the state's GHG emissions reduction targets by requiring that statewide GHG emissions be reduced to 1990 levels by 2020, and to 40 percent below 1990 levels by 2030, respectively. AB 1279 codified EO B-55-18 by requiring that the state achieve net zero GHG emissions no later than 2045; AB 1279 also requires the state to reduce direct anthropogenic GHG emissions 85 percent below 1990 levels by 2045. The 2045 CAP sets a series of GHG emissions reduction targets and goals to align with various state, regional, and County targets. Most notably, this includes the targets established by SB 32 for 2030, SB 100 and SB 1020 for renewable energy and zero-carbon resources, and the statewide goal established by AB 1279 to achieve carbon neutrality by 2045.

State Targets

AB 32 and SB 32:

- By 2020, reduce GHG emissions to 1990 levels.
- By 2030, reduce GHG emissions to 40 percent below 1990 levels.

AB 1279:

- By 2045, reduce statewide anthropogenic GHG emissions to at least 85 percent below 1990 levels.
- By 2045 or sooner, achieve net zero[21] GHG emissions and achieve and maintain net negative GHG emissions thereafter.

SB 100 and SB 1020:

- By 2035, source 90 percent of retail sales of electricity to California end-use customers from eligible renewable energy resources and zero-carbon resources.
- By 2035, source 100 percent of electricity procured to serve all state agencies from eligible renewable energy resources and zero-carbon resources.
- By 2045, source 100 percent of retail sales of electricity to California end-use customers from eligible renewable energy resources and zero-carbon resources.

The 2017 Scoping Plan sets forth a statewide plan to achieve the state's SB 32 2030 GHG emissions reduction target. The 2022 Scoping Plan, adopted by CARB in December 2022, supersedes the 2017 Scoping Plan, and is the state's plan to achieve carbon neutrality by 2045 or earlier and reduce anthropogenic emissions to 85 percent below 1990 levels by 2045 as mandated by AB 1279.

[21] AB 1279 defines *net zero GHG emissions* as "emissions of GHGs, as defined in subdivision (g) of Section 38505, to the atmosphere are balanced by removals of GHG emissions over a period of time, as determined by CARB." California Health and Safety Code Section 38562.2.

Regional Targets

SB 375/SCAG Regional Transportation Plan:

- By 2035, reduce GHG emissions from light-duty vehicles by 19 percent per capita, below a 2005 baseline.
- By 2040, reduce GHG emissions from light-duty vehicles by 21 percent per capita, below a 2005 baseline.

OurCounty Sustainability Plan

- By 2025, reduce GHG emissions Countywide by 25 percent below 2015 levels.
- By 2035, reduce GHG emissions Countywide by 50 percent below 2015 levels.
- By 2045, achieve carbon neutrality for County municipal operations.
- By 2050, achieve carbon neutrality Countywide.

2045 CAP Targets and Carbon Neutrality Goal

The 2045 CAP identifies three targets and one long-term aspirational goal for GHG emissions in unincorporated Los Angeles County. The targets are emissions reductions levels that the 2045 CAP can achieve through the implementation of strategies, measures, and actions, based on quantitative emissions modeling. In other words, the 2045 CAP quantitatively demonstrates how unincorporated Los Angeles County can achieve these three targets. The goal is for carbon neutrality, but implementation of the 2045 CAP is not enough to achieve this emissions level. This is a long-term aspiration of the County to align with the State of California's new statutory target of net zero GHG emissions by 2045.

The targets and carbon neutrality goal in the 2045 CAP align with various state, regional, and County targets for 2030, 2035, and 2045. The 2045 CAP includes a target for the year 2030 to align with SB 32, a target for the year 2045 to align with SB 1279, and an interim target year of 2035 to show substantial progress between the 2030 and 2045 targets and associated state goals. These target years were also selected to support using the 2045 CAP for CEQA streamlining of project-level climate change impacts. (See Chapter 4 for additional discussion of the 2045 CAP's relationship to CEQA.)

2045 CAP Targets

- By 2030, reduce GHG emissions by 40 percent b elow 2015 levels in unincorporated Los Angeles County.
- By 2035, reduce GHG emissions by 50 percent below 2015 levels in unincorporated Los Angeles County.
- By 2045, reduce GHG emissions by 83 percent below 2015 levels in unincorporated Los Angeles County.

2045 CAP Aspirational Goal

- By 2045, achieve carbon neutrality in unincorporated Los Angeles County.

Figure 2-5 shows unincorporated Los Angeles County's emissions from 2010 through 2018 along with the Adjusted BAU forecast through 2045. It also includes the BAU forecast for reference and shows the 2045 CAP's target and goal trendline from 2018 through 2045. As shown in Figure 2-5, the 2030 target of 40 percent below 2015 levels by 2030 sets unincorporated Los Angeles County on a course that exceeds the 2025 Countywide target from the OurCounty Sustainability Plan, proceeds on a near-linear trajectory toward the 2035 and 2045 targets, and lays the groundwork for achieving the aspirational 2045 carbon neutrality goal.

The 2030 target is consistent with the SB 32 target of a 40 percent reduction below 1990 levels. Total unincorporated Los Angeles County emissions in 1990 are estimated to be 6.4 million $MTCO_2e$. Because the 2015 emissions of 5.5 million $MTCO_2e$ are 15 percent lower than the 1990 emissions, the 2030 target of a 40 percent reduction below 2015 levels is equivalent to a 48 percent reduction below 1990 levels. This exceeds the state target of 40 percent below 1990 levels by 2030. As such, the 2045 CAP's 2030 target is in line with (and actually more stringent than) the SB 32 target for the state. The 2045 target of 83 percent below 2015 levels (equivalent to 85 percent below 1990 levels) aligns with the State of California's 2045 target as codified in AB 1279 and evaluated in the Final 2022 Scoping Plan. In addition, the 2035 target of 50 percent below 2015 levels (equivalent to 57 percent below 1990 levels) puts unincorporated Los Angeles County on the trajectory to achieve 85 percent below 1990 levels by 2045, consistent with state targets. These concepts are illustrated in Figure 2-5 and **Figure 2-6**.

Year	California	2045 CAP
2030	40% below 1990	40% below 2015*
2035	none	50% below 2015
2045	85% below 1990 Carbon Neutrality	83% below 2015& Carbon Neutrality#
2050	80% below 1990	none

GHG

*A reduction of 40% below 2015 levels is equivalent to **48% below 1990 levels***
&A reduction of 83% below 2015 levels is equivalent to **85% below 1990 levels***
#The 2045 CAP has an ***aspirational goal*** of carbon neutrality by 2045*

Figure 2-5: Statewide and 2045 CAP Greenhouse Gas Emissions Targets and Goals

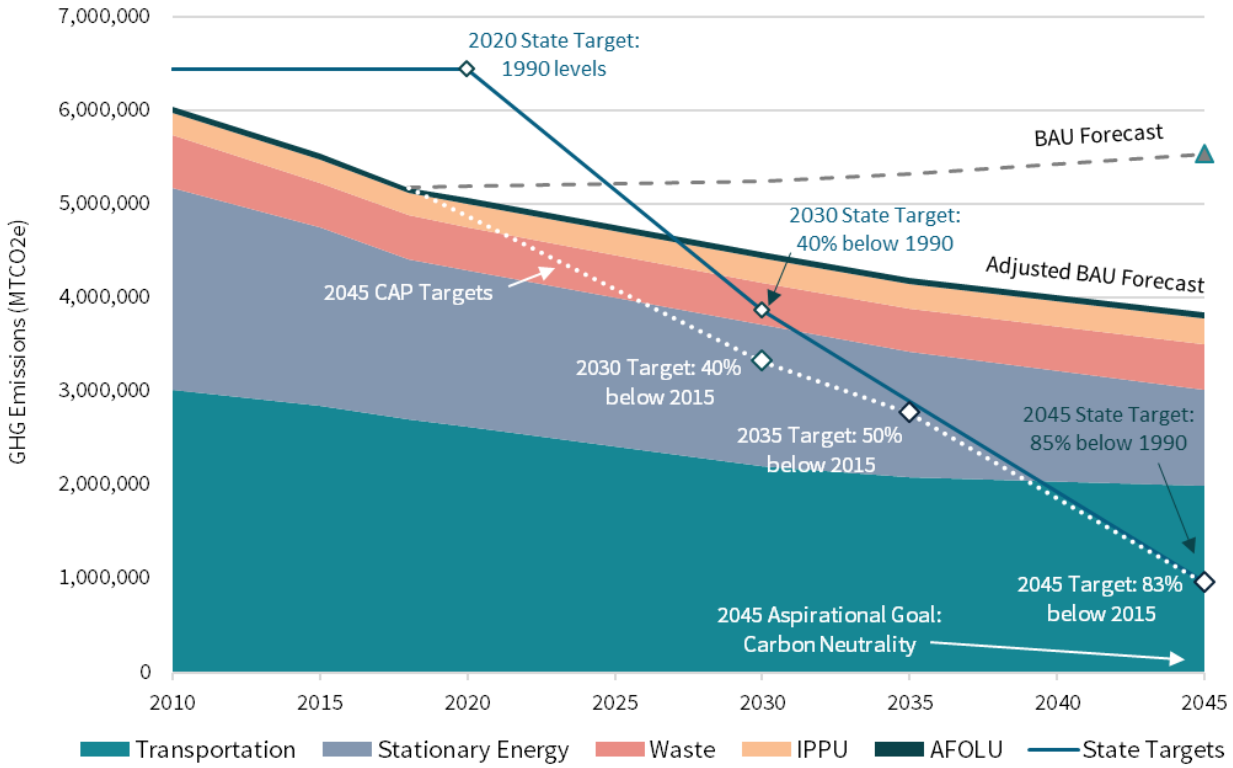


Figure 2-6: 2030, 2035, and 2045 Greenhouse Gas Emissions Targets and 2045 Aspirational Goal

Source: Appendix B: Emissions Forecasting and Reduction Methods.

CHAPTER 3

GHG Emissions Reduction Strategies, Measures, and Actions

3.1 GHG Emissions Reduction Framework

Although state policies and regulations contribute greatly to reducing GHG emissions, local measures are critical to the ability of unincorporated Los Angeles County to meet its emissions reduction targets and its long-term aspirational goal to be carbon neutral. This chapter describes the County's actions to reduce GHG emissions, organized by the following five categories of strategies:

Energy Supply | Transportation | Building Energy and Water | Waste | Agriculture, Forestry, and Other Land Uses

Throughout this chapter, strategies, measures, and actions are defined as follows:

- **Strategies** are the overall, sector-level goals of the 2045 CAP. These are broad strategies that aim for overarching goals within each emissions sector and are based on the Draft CAP strategies. For example, "*Decarbonize the Energy Supply*" is a strategy.
- **Measures** are focused, sub-sector–specific programs and goals that include performance standards that are designed to be quantified for GHG emissions reductions. They support strategies and are achieved through individual implementing actions. For example, "*Procure Zero-Carbon Electricity*" is a measure.
- **Actions** are the specific policies, programs, or tools that will be implemented to support long-range planning. Actions are intended to be implemented in a coordinated manner to make meaningful progress toward the associated measure and strategy. For example, "*Enroll the community in CPA's 100 percent Green Power option*" is an action.

Strategies in the 2045 CAP include at least one defined GHG emissions reduction measure with implementing actions and time-defined targets that state the levels of performance required to reduce emissions.

As discussed in Chapter 1, the 2045 CAP is a policy document that would support development already allowed under the General Plan's land use assumptions in the Land Use Element and 2021–2029 Housing Element. No changes to General Plan land use designations, zoning, or land use–specific projects are proposed as part of the 2045 CAP.

3.2 GHG Emissions Reduction Potential

Quantitative modeling has been used to estimate the GHG emissions reductions associated with the performance objective(s) of 18 separate measures. The modeling incorporates state and County policies, resolutions, programs, and incentives, as well as outreach and education activities (as detailed in Appendix B). This analysis quantifies the annual emissions reductions anticipated from each of the 18 measures in 2030, 2035, and 2045.

Through locally implemented strategies and measures, described in more detail in the following sections, annual emissions reductions for unincorporated Los Angeles County are anticipated to be 1,580,723 $MTCO_2e$ by the year 2030 (**Table 3-1**). Combined with state and regional measures, local measures will enable unincorporated Los Angeles County to reduce total community GHG emissions to approximately 2,899,852 $MTCO_2e$ in the year 2030 (**Table 3-2**). This reduction of approximately 48 percent from 2015 levels would enable unincorporated Los Angeles County to exceed its 2030 target. Also shown in these tables, annual emissions reductions for unincorporated Los Angeles County are anticipated to be 2,033,420 $MTCO_2e$ in the year 2035 and 2,988,956 $MTCO_2e$ in the year 2045—61 percent below 2015 levels in 2035 and 85 percent below 2015 levels in 2045—exceeding the targets for both years. These measures would also put unincorporated Los Angeles County on a path toward attaining carbon neutrality by 2045.

Table 3-1: Annual Greenhouse Gas Emissions Reductions by Strategy

STRATEGY	ANNUAL GHG EMISSIONS REDUCTIONS ($MTCO_2e$/YEAR) 2030	2035	2045
Energy Supply			
Strategy 1: Decarbonize the Energy Supply	511,476	363,311	52,148
Transportation			
Strategy 2: Increase Densities and Diversity of Land Uses Near Transit	66,542	63,286	61,480
Strategy 3: Reduce Single-Occupancy Vehicle Trips	11,465	13,715	13,324
Strategy 4: Institutionalize Low-Carbon Transportation	606,799	969,808	1,766,822
Building Energy and Water			
Strategy 5: Decarbonize Buildings	183,524	293,575	499,860
Strategy 6: Improve Efficiency of Existing Building Energy Use	22,274	41,255	203,455
Strategy 7: Conserve Water	10,575	15,122	11,764
Waste			
Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream	154,514	248,362	342,934
Agriculture, Forestry, and Other Land Use			
Strategy 9: Conserve and Connect Wildlands and Working Lands	8,953	17,906	26,858
Strategy 10: Sequester Carbon and Implement Sustainable Agriculture	4,602	7,080	10,310
TOTAL REDUCTIONS	**1,580,723**	**2,033,420**	**2,988,956**

Abbreviation: $MTCO_2e$/year = metric tons of carbon dioxide equivalent per year
Note: Totals may not add precisely due to rounding.
Source: Appendix B: Emissions Forecasting and Reduction Methods.

Table 3-2: Summary of Unincorporated Los Angeles County Greenhouse Gas Emissions Reductions by Year

DATA / METRIC	ANNUAL GHG EMISSIONS ($MTCO_2e$/YEAR) 2030	2035	2045
Business-as-Usual Forecast	5,238,062	5,319,243	5,524,939
Adjusted Business-as-Usual Forecast	4,480,574	4,204,572	3,840,154
Total Reductions from 2045 CAP Measures	-1,580,723	-2,033,420	-2,988,956
Resulting Community Emissions with 2045 CAP Implementation	2,899,852	2,171,152	851,199
Emissions Targets (2030, 2035, and 2045)	**3,318,693**	**2,765,578**	**958,088**
Target/Goal Met?	**Yes**	**Yes**	**Yes**

Abbreviations: 2045 CAP = 2045 Los Angeles County Climate Action Plan; *$MTCO_2e$/year = metric tons of carbon dioxide equivalent per year*
Note: Totals may not add precisely due to rounding.
Source: Appendix B: Emissions Forecasting and Reduction Methods.

Figure 3-1 depicts unincorporated Los Angeles County's GHG emissions reduction pathway for meeting its targets through 2045 and making substantial progress toward the long-term aspirational goal of carbon neutrality by 2045. To achieve that long-term aspirational goal, additional state and local measures will be needed, potentially including carbon offsets. The figure illustrates that approximately 850,000 $MTCO_2e$ in residual emissions will need to be eliminated or offset to meet the 2045 carbon-neutral aspirational goal.

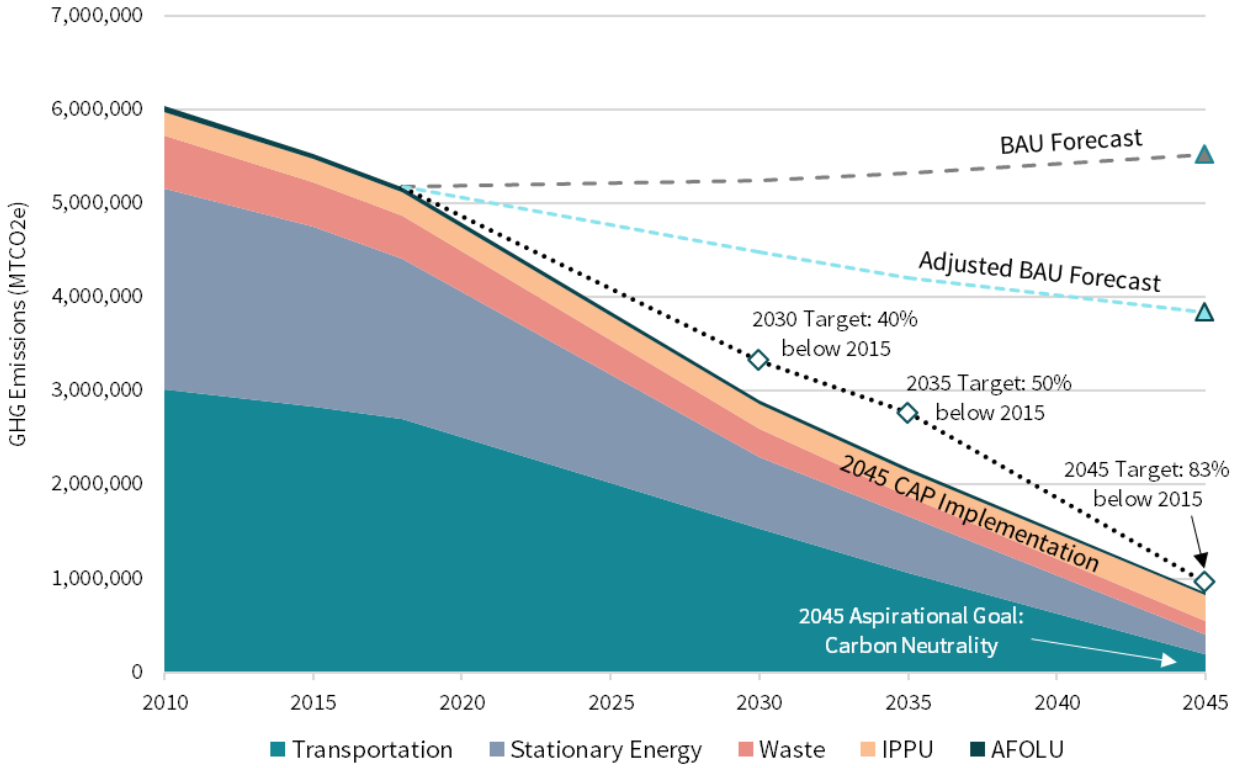


Figure 3-1: Communitywide Greenhouse Gas Emissions Forecasts with 2045 Climate Action Plan Implementation

Source: Appendix B: Emissions Forecasting and Reduction Methods.

Core Measures

Although the 2045 CAP includes 25 measures and more than 90 implementing actions, achieving the GHG emissions targets for 2030, 2035, and 2045 described in Chapter 2 can be accomplished by successfully reaching the performance objectives of the core measures.

Based on the GHG emissions reduction estimates provided in Chapter 3, **Figure 3-2** shows how five core measures out of the 18 quantified measures contribute almost 90 percent of the total reductions expected by 2030. Unincorporated Los Angeles County can meet its targets for 2030 and 2035 solely through implementation of these five core measures[22]:

- T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales
- ES2: Procure Zero-Carbon Electricity
- E1: Transition Existing Buildings to All-Electric
- T8: Accelerate Freight Decarbonization
- W1: Institutionalize Sustainable Waste Systems and Practices

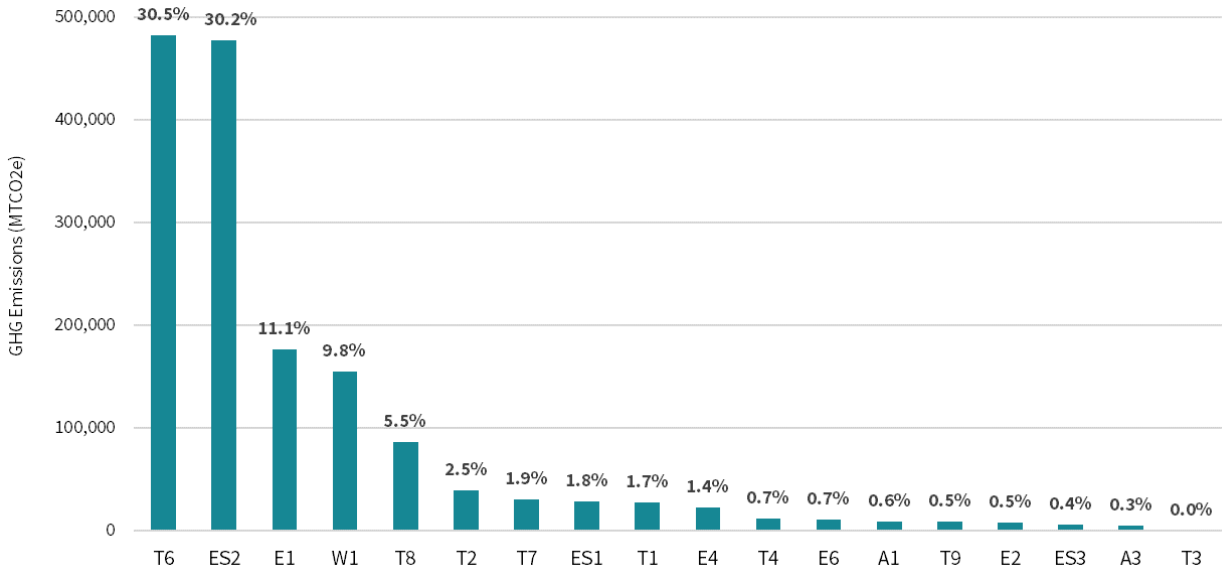


Figure 3-2: Greenhouse Gas Emissions Reduction Measures, Ranked by 2030 Reduction Potential

Source: Appendix B: Emissions Forecasting and Reduction Methods.

Table 3-3 summarizes these five core measures including their performance objectives, implementing agencies, and potential funding sources. Additional detail is provided in Appendix E, including each measure's implementing actions and associated metrics.

[22] Achieving the performance objectives for these six measures should cause unincorporated Los Angeles County to exceed the 2030 target by more than 160,000 $MTCO_2e$ and the 2035 target by more than 230,000 $MTCO_2e$.

Table 3-3: Core Measures for Meeting Unincorporated Los Angeles County's 2030, 2035, and 2045 Greenhouse Gas Emissions Targets

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES
T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales	Increase the fleetwide percentage of light-duty vehicles in unincorporated Los Angeles County that are ZEVs to 30% by 2030; 50% by 2035; and 90% by 2045. Increase the sales of new light-duty vehicles in unincorporated Los Angeles County that are ZEVs to 68% by 2030 and 100% by 2035. Install new public and private shared electric vehicle charging stations (EVCS): 37,000 by 2030; 74,000 by 2035; and 140,000 by 2045. Install new EVCSs at County facilities and properties: 5,000 by 2030; 10,000 by 2035; and 25,000 by 2045.	CSO ISD DRP PW	Fire LASD Parks Beaches and Harbors SCE	• SCE Charge Ready Program • SCAQMD and MSRC Residential EV Charging Incentive Pilot Program • SCAQMD Alternative Fuel Vehicle and Fueling Infrastructure Grants • SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant • SCAQMD Goods Movement Emission Reduction Program CARB Clean Fuel Reward and CALeVIP • CARB Clean Mobility Options Voucher Pilot Program • CARB Low Carbon Transportation Investments and Air Quality Improvement Program • CARB Bus Replacement Grant • CARB Hybrid and Zero Emission Truck and Bus Voucher Incentive Project • CARB Greenhouse Gas Reduction Fund • CPUC Transportation Electrification Program • CEC CALeVIP and EVSE Rebates • CEC Clean Transportation Program • CalCAP EV Charging Station Financing Program for small businesses • Federal Inflation Reduction Act EV tax credits and other financial incentives • Federal EV Charging Tax Credit • Federal Zero-Emission Transit Bus Tax Exemption

Table 3-3: Core Measures for Meeting Unincorporated Los Angeles County's 2030, 2035, and 2045 Greenhouse Gas Emissions Targets (cont.)

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES
ES2: Procure Zero-Carbon Electricity	Participate in CPA's Green Power option, SCE's Green Rate option, or other available 100% zero-carbon electricity service: 100% municipal participation by 2025 and 96% community participation by 2030.	ISD CSO	CPA SCE LA100	• CPA Powershare program • Federal Inflation Reduction Act • CARB Greenhouse Gas Reduction Fund • CARB California Climate Investments program • CPUC California Solar Initiative • CPUC Self-Generation Incentive Program • Low-Income Solar and Wind Investment Tax Credit • U.S. DOE Renewable Energy and Efficiency Energy grants
E1: Transition Existing Buildings to All-Electric	Electrify the existing residential building stock: 25% by 2030; 40% by 2035; and 80% by 2045. Electrify the existing nonresidential building stock: 15% by 2030; 25% by 2035; and 60% by 2045. Require ZNE for all major renovations: 50% by 2030; 75% by 2035; and 100% by 2045. Adopt building performance standards and reach code(s). Adopt ZNE ordinance.	DRP PW ISD CSO	SCE SoCalGas CPA RePowerLA Coalition NRDC	• CPUC Technology and Equipment for Clean Heating and Building Initiative for Low Emissions Development programs • CARB Greenhouse Gas Reduction Fund • CARB California Climate Investments program • California Alternative Energy and Advanced Transportation Financing Authority • California Lending for Energy and Environmental Needs Center • Affordable Housing and Sustainable Communities Program • CPUC Energy Saving Assistance Program • CPA and CALeVIP rebates • Federal Inflation Reduction Act • Home Electrification and Energy Efficiency Rebates • Efficient Building Code Adoption Grants • County General Fund

Table 3-3: Core Measures for Meeting Unincorporated Los Angeles County's 2030, 2035, and 2045 Greenhouse Gas Emissions Targets (cont.)

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES
W1: Institutionalize Sustainable Waste Systems and Practices	Increase the total unincorporated Los Angeles County waste diversion rate to 85% by 2030; 90% by 2035; and 95% by 2045. Reduce the disposal of single-use plastics in landfills. Increase Construction and Demolition Ordinance to 70% diversion. Increase percentage of construction and demolition debris reused in new projects (private, public).	PW CSO	DRP DPH LACSD CalRecycle	• CalRecycle grants • CEC grants • USDA Water & Waste Disposal Loan & Grant Program
T8: Accelerate Freight Decarbonization	Increase the fleetwide percentage of medium- and heavy-duty vehicles in unincorporated Los Angeles County that are ZEVs to 40% by 2030; 60% by 2035; and 90% by 2045. Increase the fleetwide percentage of medium- and heavy-duty vehicles in the County-owned fleet that are ZEVs to 50% by 2030; 70% by 2035; and 95% by 2045. Ensure that 100 percent of the drayage truck fleet is ZEV by 2035. Ensure that 100 percent of sales of medium- and heavy-duty trucks are ZEV by 2045. All new warehouse loading docks must have EVCSs by 2030. All existing warehouse loading docks must have EVCSs by 2030.	PW DRP CSO ISD LASD Fire Parks	SCAQMD CARB SCAG Metro Councils of governments Cities	• SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant • SCAQMD Goods Movement Emission Reduction Program • CEC CALeVIP EVSE Rebates • SCE Charge Ready Program EVSE rebates • CARB Advanced Technology Freight Demonstration Projects • CARB Low Carbon Transportation Investments and Air Quality Improvement Program • CARB Clean Vehicle Rebate Project (CVRP) public fleet vehicle rebates • CEC Clean Transportation Program • CPUC statewide transportation electrification infrastructure rebate program • County General Fund Federal Inflation Reduction Act EV tax credits and other financial incentives • Federal New EV Tax Credit • Federal EV Charging Tax Credit • Federal Commercial EV Tax Credit

Table 3-3: Core Measures for Meeting Unincorporated Los Angeles County's 2030, 2035, and 2045 Greenhouse Gas Emissions Targets (cont.)

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES

Abbreviations: AHSC = Center, Affordable Housing and Sustainable Communities; Beaches and Harbors = Los Angeles County Department of Beaches & Harbors; C&D = construction and demolition; CAEATFA = California Alternative Energy and Advanced Transportation Financing Authority; CalCAP = California Capital Access Program; CALeVIP = California Electric Vehicle Infrastructure Project; CalRecycle = California Department of Resources Recycling and Recovery; Caltrans = California Department of Transportation; CARB = California Air Resources Board; CDFA = California Department of Food and Agriculture; CEC = California Energy Commission; CPA = Clean Power Alliance; CPUC = California Public Utilities Commission; CSO = Chief Sustainability Office; CVRP = Clean Vehicle Rebate Project; DPH = Department of Public Health; DRP = Department of Regional Planning; ESAP = Energy Saving Assistance Program; EV = electric vehicle; EVCS = electric vehicle charging station(s); EVSE = electric vehicle supply equipment; GGRF = Greenhouse Gas Reduction Fund; ISD = Internal Services Department; LA100 = The Los Angeles 100% Renewable Energy Study; LACSD = Los Angeles County Sanitation Districts; LASD = Los Angeles County Sheriff's Department; Metro = Los Angeles County Metropolitan Transportation Authority; MSRC = Mobile Source Air Pollution Reduction Review Committee; NRDC = National Resources Defense Council; Parks = Los Angeles County Department of Parks and Recreation; PW = Public Works; SCAG = Southern California Association of Governments; SCAQMD = South Coast Air Quality Management District; SCE = Southern California Edison; SoCalGas = Southern California Gas Company; USDA = U.S. Department of Agriculture; U.S. DOE = U.S. Department of Energy; U.S. EPA = U.S. Environmental Protection Agency; ZEV = zero emission vehicle; ZNE = zero net energy.
Source: Appendix B: Emissions Forecasting and Reduction Methods.

Costs and Savings

Many GHG emissions reduction actions result in cost savings to residents, businesses, and the County. These savings are achieved through participation in programs aimed at increasing energy efficiency, water efficiency, use of public transportation, and utilization of renewable energy sources. Increased energy and water efficiency provides cost savings in the form of lower utility bills, while the use of public transportation can reduce costs associated with gasoline use and vehicle maintenance costs. Renewable on-site energy generation also provides cost savings to residents and business owners, as these buildings would not need to purchase as much electricity from utility providers. State and federal measures are critical to meeting the County's emissions reduction goals; however, local programs and policies, as well as choices made by unincorporated Los Angeles County's residents and businesses, will determine the ability of unincorporated Los Angeles County to achieve its emissions reduction targets.

Many GHG emissions reduction actions will result in cost savings for residents and businesses. There is often a misperception that climate action costs more than inaction. When full-cost accounting is conducted and understood, in many cases costs are lower for emissions-reducing activities (like energy conservation and local rooftop solar electricity generation) and much higher for emissions-producing activities (on average, charging an electric car costs *half* of what it costs to refuel a comparable gas-powered car).[23,24] In addition, there will be broader regional indirect cost savings from implementing the 2045 CAP's measures and actions such as potentially reduced climate-induced disasters (like heat waves, wildfires, and sea level rise) and associated cost recovery.

[23] California Air Resources Board. 2023. Cars and Light-Trucks are Going Zero—Frequently Asked Questions. Available: https://ww2.arb.ca.gov/resources/documents/cars-and-light-trucks-are-going-zero-frequently-asked-questions. Accessed in February 2023.

[24] While electricity costs vary, the average price in California is about 18 cents per kilowatt-hour (kWh). At this price, charging an electric car such as the Nissan LEAF with a 40-kWh battery with a 150-mile range would cost about $7 to fully charge. Meanwhile, fueling a 25-miles-per-gallon gas vehicle at a gas price of $3.70 per gallon would cost about $22 for enough gas to drive approximately 150 miles. (Drive Clean. 2021. Electric Car Charging Overview. Available: https://driveclean.ca.gov/electric-car-charging. Accessed February 2023.)

The Path to Carbon Neutrality

AB 1279 mandates that by 2045, the State of California must achieve net zero GHG emissions and reduce anthropogenic GHG emissions to 85 percent below 1990 levels. In December 2022, CARB adopted the 2022 Scoping Plan, which lays out the sector-by-sector road map for California to achieve carbon neutrality by 2045 or earlier. The 2045 CAP aligns with AB 1279 and the 2022 Scoping Plan through its 2045 **target** of reducing unincorporated Los Angeles County's emissions to 85 percent below 1990 levels and its **aspirational goal** of carbon neutrality by 2045. As defined by AB 1279, CARB, and the 2045 CAP, carbon neutrality and net zero GHG emissions are equivalent, and mean that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of CO_2 that is stored, both in natural sinks and through mechanical sequestration.[25] To achieve carbon neutrality, the County must leverage its influence as a climate leader, collaborating with other local jurisdictions as well as the private, institutional, and nonprofit sectors. Recognizing that no single entity has direct control over communitywide GHG emissions, a collaborative approach is essential to realize equitable and sustainable climate actions for a carbon neutral Los Angeles County.

The 2045 CAP provides a road map for successfully achieving both the 2030 and 2035 targets by a substantial margin along with the 2045 target. The 2045 CAP places unincorporated Los Angeles County on a trend that aims for carbon neutrality by 2045. However, as illustrated in Figure 3-1, successful implementation of the 2045 CAP alone will not be enough for unincorporated Los Angeles County to achieve this aspirational goal of carbon neutrality. As indicated in Table 3-2, even with CAP implementation, there will still be approximately 850,000 $MTCO_2e$ of residual emissions in 2045. These emissions will originate from buildings and energy industries that can reduce but cannot eliminate emissions from natural gas use (approximately 170,000 $MTCO_2e$), use of light-duty vehicles and heavy-duty trucks (approximately 190,000 $MTCO_2e$), fluorinated products/product use (approximately 285,000 $MTCO_2e$), solid waste disposal (approximately 86,000 $MTCO_2e$), wastewater treatment (approximately 73,000 $MTCO_2e$), miscellaneous other sources (approximately 32,000 $MTCO_2e$), off-road equipment use (approximately 27,000 $MTCO_2e$), and fertilizer use (approximately 24,000 $MTCO_2e$).

Figure 3-3 depicts unincorporated Los Angeles County's residual GHG emissions in 2045 with implementation of the 2045 CAP for each major sector. Total residual emissions are approximately 850,000 $MTCO_2e$.

[25] California Health and Safety Code Section 38562.2.

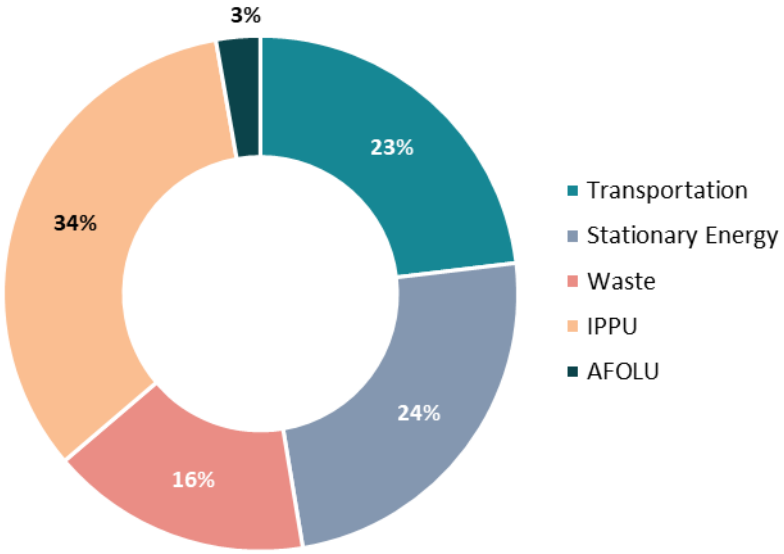


Figure 3-3: Residual 2045 Communitywide Greenhouse Gas Emissions with 2045 Climate Action Plan Implementation

Source: Appendix B: Emissions Forecasting and Reduction Methods.

The County expects that new state regulations to be adopted in the next 20–25 years will further reduce GHG emissions and that technologies will be established and more commercially available over the next 20–25 years that would further reduce these residual emissions. To obtain carbon neutrality by 2045, it is highly likely that the following actions will need to occur in unincorporated Los Angeles County:

- Electrify 90–100 percent of buildings and facilities, including residential, commercial, industrial, and energy industries.
- Achieve zero (or near-zero) waste going to landfills.
- Use ZEVs for more than 90 percent of the Countywide vehicle fleet, including light-duty passenger vehicles and heavy-duty trucks.
- Eliminate all oil and natural gas operations.
- Transition all refrigerants, fire suppressants, and consumer products used within unincorporated Los Angeles County to extremely low (or zero) global warming potential (GWP) substitutes.
- Replace nearly all off-road equipment and off-road vehicles (including locomotives) with electric, green hydrogen,[26] or other zero-emission engine technologies.
- Capture all fugitive wastewater treatment process emissions and convert to fuel.
- Eliminate nitrous oxide emissions from fertilizer application.

[26] *Green hydrogen* is hydrogen generated by renewable energy or from low-carbon power, and has significantly lower carbon emissions than traditional hydrogen, which is produced by steam reforming of natural gas.

- Implement statewide, regional, and local carbon removal and carbon capture and sequestration strategies to offset all remaining residual emissions.

If the residual emissions, shown in Figure 3-1, cannot be eliminated through new regulations or technologies, the County will consider future implementation of carbon removal strategies (such as carbon capture and sequestration and direct air capture), along with future implementation of a carbon offsets/credits program, following completion of a feasibility study, to achieve carbon neutrality by 2045. Evolving state regulations, programs, and financial incentives will provide new opportunities for unincorporated Los Angeles County to counteract any residual emissions. For example, almost $9 billion in in carbon capture and sequestration support was included in the $1 trillion Infrastructure Investment and Jobs Act of 2021, which includes funding to establish four direct air capture hubs. As another example, SB 27 of 2021 will provide carbon removal projects via an in-state project registry, which will serve as a database of projects in the state that drive climate action on natural and working lands. Further, SB 905 of 2022 requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate carbon capture, utilization, or storage (CCUS) and CO_2 removal projects and technology; these projects could also support unincorporated Los Angeles County's aspirations to achieve carbon neutrality.

Alignment with the 2022 Scoping Plan

The 2022 Scoping Plan, adopted by CARB in December 2022, expands on prior scoping plans. This plan responds to more recent legislation, outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045 and achieving carbon neutrality[27] by 2045 or earlier.[28] The 2022 Scoping Plan outlines the strategies the state will implement to achieve carbon neutrality by reducing GHG emissions to meet the anthropogenic target, and by expanding actions to capture and store carbon through the state's natural and working lands and using a variety of mechanical approaches.

The 2022 Scoping Plan also discusses the role of local governments in meeting the state's GHG emissions reduction goals, because local governments have jurisdiction and land use authority related to community-scale planning and permitting processes, local codes and actions, outreach and education programs, and municipal operations. The efforts of local governments to reduce GHG emissions within their jurisdictions are critical to achieving the state's long-term climate goals. Furthermore, local governments make critical decisions on how and when to deploy transportation infrastructure and can choose to support transit, walking, bicycling, and neighborhoods that allow people to transition away from cars; they can adopt building ordinances that exceed statewide building code requirements; and they play a critical role in facilitating the rollout of ZEV infrastructure.[29] The 2022 Scoping Plan encourages local governments to take

[27] *Carbon neutrality* means "net zero" emissions of GHGs. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of CO_2 that is stored, both in natural sinks and through mechanical sequestration. AB 1279 uses the terminology "net zero" and the 2022 Scoping Plan uses the terminology "carbon neutrality" or "carbon neutral." For purposes of this 2045 CAP, these terms mean the same thing and are used interchangeably.

[28] California Air Resources Board. 2022. *2022 Scoping Plan For Achieving Carbon Neutrality.* November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf. Accessed in January 2023.

[29] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality.* Appendix D, "Local Actions." November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed in January 2023.

ambitious, coordinated climate actions at the community scale—actions that are consistent with and supportive of the state's climate goals. These actions could include:

- Develop local CAPs and strategies consistent with the state's GHG emissions reduction goals.
- Incorporate state-level GHG emissions priorities into local governments' processes for approving land use and individual plans and individual projects.
- Implement CEQA mitigation, as needed, to reduce GHG emissions associated with new land use development projects.
- Leverage opportunities for regional collaboration.

The 2045 CAP is consistent with CARB's recommendation for local governments contained in the 2022 Scoping Plan, as demonstrated in Table H-1 of Appendix H.

3.3 Strategies, Measures, and Actions

This section provides an in-depth discussion of the strategies and GHG emissions reduction measures in the 2045 CAP, describing specific implementing actions, performance objectives, anticipated GHG emissions reductions, estimated cost impacts, and implementation responsibilities. **Measures and actions that have been quantified are identified with a ^{Q} superscript.**

Although the 2045 CAP focuses on reducing unincorporated Los Angeles County emissions, six actions in the energy sector, seven actions in the transportation sector, and three actions in the waste sector specifically aim to reduce GHG emissions associated with the County's municipal operations. **Actions specifically designed to reduce emissions for County municipal operations are identified with an ^{M} superscript.**

For estimated up-front capital costs, the following key is used:

- $: Less than 500,000 U.S. dollars (USD)
- $$: 500,000 to 2 million USD
- $$$: 2 million to 15 million USD
- $$$$: 15 million to 150 million USD
- $$$$$: More than 150 million USD

As noted in Chapter 1, in this document, the term "unincorporated Los Angeles County" means the unincorporated areas of Los Angeles County; "Countywide" refers to Los Angeles County in its entirety, inclusive of both unincorporated areas and all 88 incorporated cities; and "County" refers to County of Los Angeles government.

Energy Supply (ES)

The source of energy used is essential to achieving the County's goal to reduce GHG emissions associated with energy supply and consumption. This category includes a range of strategies aimed at decarbonizing the energy used throughout unincorporated Los Angeles County. The approach combines eliminating all oil and gas extraction operations in unincorporated Los Angeles County, decarbonizing the energy supply, generating energy on-site through renewables, and load management and peak reductions.

Decarbonizing the energy supply provides multiple co-benefits for residents, employees, and employers. These benefits have not always reached frontline, BIPOC, and disadvantaged communities. For example, residents of affordable housing and multifamily housing have not been well served by local renewable energy programs, such as rooftop solar, leading to cycles of disinvestment and potentially higher energy bills. Concurrently, many of these same residents are already extremely rent and utility burdened, and COVID-19 has exacerbated these problems. The lack of housing and high cost of living in the region mean that increased costs in household expenses could trigger displacement. New and innovative approaches are needed to bring the benefits of renewable energy to all residents while protecting and increasing affordable housing.

Energy Supply (ES) comprises the following strategy and measures:

Strategy 1: Decarbonize the Energy Supply

- Measure ES1: Develop a Sunset Strategy for All Oil and Gas Operations ♀
- Measure ES2: Procure Zero-Carbon Electricity ♀
- Measure ES3: Increase Renewable Energy Production ♀
- Measure ES4: Increase Energy Resilience
- Measure ES5: Establish GHG Requirements for New Development

Energy Supply
Strategy 1: Decarbonize the Energy Supply

2045 VISION

Phase out oil and gas extraction and provide building energy needs without using fossil fuels

Strategy Description

Oil and gas extraction is widespread and contributes significant GHG emissions into the atmosphere. These emissions are difficult to monitor and control, so this strategy aims to phase out all oil and gas extraction operations in unincorporated Los Angeles County by 2045. In January 2023, the County Board of Supervisors adopted the Oil Well Ordinance, which prohibits all new oil and gas extraction wells and production facilities in all zones and designates all existing oil and gas extraction activities as nonconforming uses in all zones. An amortization study is currently underway to determine the fastest possible phase-out timeline for all existing oil wells and production facilities. The County currently also requires that within 90 days after the abandonment of any well, the well site shall be restored as nearly as practicable to its original condition.[30]

Decarbonizing the energy supply requires three complementary components: procuring clean renewable sources of energy, shifting building energy loads for heating and cooking to electricity or renewable fuels rather than fossil fuels, and reducing energy use through energy efficiency actions. The Clean Power Alliance (CPA) enabled the County to transition to a low-carbon energy future at an accelerated pace. The CPA is a community choice aggregation program that offers participants the option to increase the amount of their electricity coming from renewable sources. The County will procure electricity that is generated by 100 percent renewable sources from CPA or other available 100 percent zero-carbon electricity service options (such as SCE's Green Rate program).

This strategy would incentivize new or upgraded energy generation and related infrastructure. Examples of such projects could include distributed generation via solar roofs, community solar, or microgrids (known as "distributed energy resources" [DER]); battery storage and EV charging stations (EVCSs); utility-scale solar photovoltaic (PV) development; and/or energy transmission and subtransmission facilities.

It is not currently possible to quantify the renewable energy potentially facilitated by the 2045 CAP that would be provided by new utility-scale solar projects, or to identify where that demand would be met. The increased demand for renewable energy could be met in a variety of additional ways, other than through new utility-scale solar projects. In particular, the importation of renewable energy into the unincorporated areas by providers such as CPA and the further development of

[30] There is a minimum bond amount of $152,000 per well; the bond must be executed in favor of the County to cover the costs of plugging if the operator fails to do so. All equipment and pipelines not necessary for operation and maintenance of other wells on-site must be removed.

rooftop solar are reasonable, feasible steps on the County's path to meeting its targets and advancing toward its goal of carbon neutrality.

According to CPA's 2022 Integrated Resource Plan (a CPUC proceeding to evaluate long-term grid resource needs), the projected 2030 renewable electricity mix is approximately 23 percent utility-scale solar, 53 percent battery storage, 21 percent onshore wind, and 2 percent hydro; the projected 2035 renewable electricity mix is 30 percent utility-scale solar, 45 percent battery storage, 24 percent onshore wind, and 1 percent hydro.[31] This demonstrates that utility-scale solar is a relatively small portion of CPA's renewable energy supply mix through 2035. In addition, because of the large number of 100 percent Green Power customers, CPA expects to meet and exceed the State of California's 30 million $MTCO_2e$ GHG targets, even in its lowest renewables case. Note that these projections do not include behind-the-meter distributed energy generation like rooftop solar because DER electricity generation is not supplied by CPA.

The County's strategy to shift to a renewables-based electricity supply must ensure equitable access to affordable, local, and reliable energy sources. An effort to develop a comprehensive community energy map will identify the geographic opportunities to deploy these distributed energy resources in an equitable manner. Prioritizing distributed energy resources in wildfire-prone communities will provide an alternative to the costly infrastructure upgrades that would be required to maintain uninterrupted power service. Enabling community-shared solar will expand access to local renewable energy for renters and other potential customers.

Where appropriate, microgrids and smart thermostats and controls can be used to manage energy demand, including lowering peak energy demand and dynamically responding to grid conditions. Reducing peak energy demand limits the use of the dirtiest "peaker" plants, limits the need to construct new generation facilities, and reduces the likelihood of power outages due to excessive demand. Installing microgrids combined with solar generation and batteries is a key strategy to support both grid and building resilience. These strategies can help offset the additional demand on electricity supply associated with electrification and can protect buildings from power outages associated with fire and extreme weather events. These strategies can also enable buildings to act as grid assets to support energy resilience, by dynamically optimizing use of renewable resources when they are most abundant.[32]

Past and Current County Actions

- In March 2016, the County Board of Supervisors instructed the Department of Regional Planning (DRP) to amend Title 22, the Planning and Zoning Code for unincorporated Los Angeles County, to ensure that oil and gas facilities may no longer operate by right in unincorporated Los Angeles County, and ensure that the regulations reflect best practices and current mitigation methods and technologies, minimize environmental impacts, and protect sensitive uses and populations. In 2020 DRP updated the Oil Well Ordinance.

[31] Clean Power Alliance. 2022. 2022 Integrated Resource Plan (IRP) Introduction. September 22, 2022. Available: https://cleanpoweralliance.org/wp-content/uploads/2022/09/Item-6-2022-IRP-Introduction.pptx. Accessed in February 2023.

[32] As responsive assets, buildings can ramp energy use up or down, depending on the cost or carbon intensity of the utility generation source. This helps utilities ensure the balanced, flexible supply and demand of high levels of renewables needed to decarbonize the electricity system, resulting in resilient cities, communities, and regions. For more, see https://rmi.org/our-work/buildings/pathways-to-zero/grid-interactive-energy-efficient-buildings/.

- In 2017, DRP amended the zoning code to support and facilitate responsible development of small-scale renewable energy systems and utility-scale renewable energy facilities.
- In 2017, the Board of Supervisors approved the creation of a community choice energy program for Los Angeles County known as the Clean Power Alliance. CPA began operating in 2018 and now serves 32 jurisdictions across Los Angeles and Ventura counties, representing 3 million residents. In 2019, all customers in unincorporated Los Angeles County were automatically enrolled in CPA's Clean Energy (50 percent renewable) tier. Since October 2022, all customers in unincorporated Los Angeles County are automatically enrolled in CPA's 100 percent renewable energy option.
- Since October 2022, all residents and businesses in unincorporated Los Angeles County have been receiving 100 percent renewable energy—wind, solar, geothermal—from CPA.
- In September 2020, the Board of Supervisors passed a motion to prepare a comprehensive review of existing County policies, practices, and operations to ensure that there are appropriate backup systems to support unincorporated Los Angeles County residents in times of emergencies including, at a minimum, a specific focus on equity. The report was published in February 2021.
- In February 2022, the Board of Supervisors passed a motion to study the feasibility of establishing Zero Net Energy (ZNE) standards for major development projects and other large-scale development.
- In March 2022, the Board of Supervisors passed a motion to ensure the equitable decarbonization of buildings by conducting a stakeholder engagement process, studying energy resource and infrastructure needs, and seeking funding.
- In April 2022, the Internal Services Department completed a feasibility study for energy resilience and microgrids at the East L.A. Civic Center.
- In September 2022, the Board of Supervisors voted to phase out oil and gas drilling and ban all new drill sites in unincorporated Los Angeles County areas. The ordinance prohibits new oil wells and production facilities in all zones, designates existing oil wells and production facilities as nonconforming uses in all zones, and establishes regulations for existing oil wells and production facilities. The phase-out will close more than 1,600 active and idle oil and gas wells in unincorporated Los Angeles County. A timetable for the phase-out will be decided after the County determines the fastest way to legally shut down the wells.
- On January 24, 2023, the Board of Supervisors adopted the Oil Well Ordinance, which becomes effective after 30 days.
- As of February 2023, the County is conducting an amortization study to determine the fastest possible phase-out timeline for all existing oil wells and production facilities. This study will consider the legal, environmental, political, and cost considerations of the phase-out. The amortization study will guide the strategy to phase out oil and gas extractions and facilities.

Alignment with State Initiatives

- SB 1137: Prohibits the development of new oil and gas wells or infrastructure in health protection zones, as defined, except for purposes of public health and safety or other limited exceptions.
- SB 100: By 2045, 100 percent of electricity is sourced from zero-carbon resources.
- SB 1020: Adds interim renewable energy and zero-carbon energy retail sales of electricity targets to California end-use customers set at 90 percent in 2035 and 95 percent in 2040; accelerates the timeline required to have 100 percent renewable energy and zero-carbon energy procured to serve state agencies from the original target year of 2045 to 2035.
- SB 1075: Requires CARB, by June 1, 2024, to prepare an evaluation that includes policy recommendations regarding the deployment, development, and use of hydrogen, and specifically the use of green hydrogen, in California.
- California Energy Efficiency Strategic Plan: A roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive Plan is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
- California Green Building Standards Code (CALGreen Code) (Title 24 Building Code): The CALGreen Code establishes mandatory measures for new residential and nonresidential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality.
- Renewables Portfolio Standard: A statewide mandate to increase the proportion of electricity from renewable sources. The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities (see SB 100 and SB 1020 above).
- SB 905 of 2002: Requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CCUS and CO_2 removal projects and technology.

Energy Supply

Strategy 1: Decarbonize the Energy Supply

MEASURE ES1: Develop a Sunset Strategy for All Oil and Gas Operations Q

Annual GHG Emissions REDUCTIONS

By 2030: 28,368

By 2035: 40,178

By 2045: 52,148

(units = $MTCO_2e$)

Estimated COST

$–$$$$

PERFORMANCE OBJECTIVES

Reduce oil and gas operations compared to 2015 levels by:

- 40 percent by 2030
- 60 percent by 2035
- 80 percent by 2045

Examine all active and abandoned oil wells for fugitive emissions of GHGs.

Conduct carbon removal feasibility study.

DESCRIPTION

Develop a sunset strategy for all oil and gas operations that prioritizes disproportionately affected communities and develop a strategy for carbon removal.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

ES1.1—Collaborate with other local jurisdictions and utilities to develop a sunset strategy for all oil and gas operations that prioritizes disproportionately affected communities. Develop an ordinance.

ES1.2—Develop a policy that requires the examination of all active, idle, and abandoned oil wells for fugitive emissions of GHGs. Coordinate with federal and state agencies conducting fugitive emissions data.

ES1.3—Develop a carbon removal strategy, including direct air capture and carbon capture and sequestration (CCS).

Energy Supply
Strategy 1: Decarbonize the Energy Supply

MEASURE ES2: Procure Zero-Carbon Electricity (Core) Q

Annual GHG Emissions REDUCTIONS

By 2030: 477,188

By 2035: 317,915

By 2045: 0*

(units = $MTCO_2e$)

Estimated COST

$–$$

PERFORMANCE OBJECTIVES

Participate in CPA's Green Power option, SCE's Green Rate option, or other available 100 percent zero-carbon electricity service:

- 100 percent municipal participation by 2025
- 96 percent community participation by 2030 (approximately 4 percent opt-out rate)

** There are zero GHG emissions reductions in 2045 because the State of California's Renewables Portfolio Standard requires 100 percent carbon-free electricity sources by 2045, and the implementation of the Renewables Portfolio Standard is accounted for in the Adjusted BAU scenario.*

DESCRIPTION

Supplying unincorporated Los Angeles County's power demand with zero-carbon electricity[33] is critical to achieving significant GHG emissions reductions. The Clean Power Alliance (CPA) is a nonprofit and community choice energy provider that currently serves 32 communities across Southern California.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

ES2.1—Transition all County facilities within unincorporated areas to CPA's 100% Green Power option, SCE's 100% Green Rate option, or other available 100% renewable electricity service.M

ES2.2—Complete enrollment of the community in CPA's 100% Green Power option or SCE's Green Rate option.

[33] *Zero-carbon electricity* means energy resources that either qualify as "renewable" in the most recent Renewables Portfolio Standard Eligibility Guidebook or generate zero GHG emissions on-site.

Energy Supply
Strategy 1: Decarbonize the Energy Supply

MEASURE ES3: Increase Renewable Energy Production [Q]

Annual GHG Emissions REDUCTIONS*

By 2030: 5,919

By 2035: 5,219

By 2045: 0[#]

(units = $MTCO_2e$)

Estimated COST

$–$$$

PERFORMANCE OBJECTIVES

Install rooftop solar PV on all existing single-family residential homes and multifamily residential buildings:

- 20 percent by 2030
- 25 percent by 2035
- 35 percent by 2045

Install rooftop solar PV on all existing commercial buildings:

- 15 percent by 2030
- 22 percent by 2035
- 32 percent by 2045

Install rooftop solar PV on all new multifamily residential buildings:

- 80 percent by 2030
- 85 percent by 2035
- 95 percent by 2045

Install rooftop solar PV on all new commercial buildings:

- 40 percent by 2030
- 50 percent by 2035
- 70 percent by 2045

DESCRIPTION

Expand local solar power generation on existing and new development and for County projects.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

ES3.1—Require rooftop solar PV for all new development.

ES3.2—Install rooftop solar PV at existing buildings.

ES3.3—Identify and install solar PV systems at existing viable County facilities and properties. [M]

ES3.4—Explore the feasibility to install community-shared solar facilities on County properties where opportunities exist. [M]

ES3.5—Require and incentivize renewable energy for affordable housing developments for both new development and existing buildings.

ES3.6—Streamline and prioritize permitting for solar and battery storage projects.

Energy Supply
Strategy 1: Decarbonize the Energy Supply

MEASURE ES3: Increase Renewable Energy Production Q

Install 20,000 kW of solar PV at LA County facilities by 2030.

Install rooftop solar PV at all affordable housing developments.

* *These GHG emissions reductions assume implementation of Measure ES2 occurs first; the vast majority of emission reductions from carbon-free electricity sources are accounted for in Measure ES2. In reality, emission reductions for these two measures will be more evenly shared.*

There are zero GHG emissions reductions in 2045 because the State of California's Renewables Portfolio Standard requires 100 percent carbon-free electricity sources by 2045, and the implementation of the Renewables Portfolio Standard is accounted for in the Adjusted BAU scenario.

Energy Supply
Strategy 1: Decarbonize the Energy Supply

MEASURE ES4: Increase Energy Resilience

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$–$$$

PERFORMANCE OBJECTIVES

- Achieve community electricity storage capacity equal to the communitywide 24-hour average usage by 2035/2045.
- Achieve community electricity generation capacity equal to the communitywide 24-hour average usage by 2035/2045.
- Establish a community resilience hub program to equip community-serving County facilities (e.g., libraries, rec centers, senior centers).
- Provide solar and battery systems sufficient to support emergency cooling and other emergency functions. Partner with the local community for implementation.
- Locate at least one hub in each County district, with a focus on vulnerable populations.
- Install microgrids based on a feasibility study.
- Obtain a grant and establish a program to support an energy efficiency and assurance program for facilities that are large energy users and support critical community functions.

DESCRIPTION

Expand energy storage and microgrids throughout the community and for County operations.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

ES4.1—Develop a program to deploy community resilience hubs[34] at scale.

ES4.2—Invest in energy storage and microgrids at critical County facilities through CPA's Power Ready Program. **M**

ES4.3—Develop a publicly accessible community energy map that identifies opportunities for deploying distributed energy resources and microgrids to improve energy resiliency.

ES4.4—Conduct feasibility studies to identify priority areas for solar and storage, combined with building- and community-scale microgrids and alternative technologies such as fuel cells and grid paralleling, to support demand management, peak shaving, and load shifting to increase grid resilience. Study implementation, costs, barriers, and obstacles and identify partnerships. Adopt regulations that establish this use and standards for its development. Limiting peak energy demand can eliminate or reduce the use of high-carbon peaker plants.

ES4.5—Develop a Countywide program to promote energy efficiency and resilience measures in facilities providing critical community services.

[34] According to the Urban Sustainability Directors Network, resilience hubs are "are community-serving facilities augmented to support residents, coordinate communication, distribute resources, and reduce carbon pollution while enhancing quality of life. Hubs provide an opportunity to effectively work at the nexus of community resilience, emergency management, climate change mitigation, and social equity while providing opportunities for communities to become more self-determining, socially connected, and successful before, during, and after disruptions."

Energy Supply
Strategy 1: Decarbonize the Energy Supply

MEASURE ES5: Establish GHG Requirements for New Development

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$–$$

PERFORMANCE OBJECTIVES

- Require all new development that does not require a General Plan amendment shall be consistent with the 2045 CAP.
- Develop reach codes, ordinances, and conditions of approval as needed.

DESCRIPTION

Develop and implement requirements to ensure that new development is consistent with the 2045 CAP milestone targets for 2030, 2035, and 2045. These requirements include applicant completion of a project review consistency checklist for non-CEQA-exempt new development requiring discretionary approvals to demonstrate consistency with the 2045 CAP.

To demonstrate consistency with the 2045 CAP, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emission reduction measures. The project review checklist will be used in one of two ways: (1) For projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for streamlined project-specific CEQA GHG analysis; or (2) for projects required or electing to prepare project-specific CEQA GHG analyses, to demonstrate that all feasible applicable checklist measures or alternative project emissions reduction measures have nevertheless been implemented, either as project features or as GHG mitigation measures.

Projects that do not implement all feasible applicable checklist measures or alternative project emissions reduction measures may have significant GHG impacts because they could conflict with an applicable GHG reduction plan per CEQA Guidelines Appendix G Section VII. They may also be inconsistent with the General Plan because the CAP is a component of the Air Quality Element. In addition, the County will assess the feasibility of developing a GHG offsets/credit program to create a pathway toward achieving the aspirational 2045 goal of carbon neutrality. For more information, see Chapter 4, *Implementation and Monitoring*.

Energy Supply
Strategy 1: Decarbonize the Energy Supply

MEASURE ES5: Establish GHG Requirements for New Development

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

ES5.1—Identify new requirements for new development, including reach codes,[35] ordinances, and conditions of approval to reduce GHG emissions from energy use, transportation, waste, water, and other sources. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability.

ES5.2—Implement the 2045 CAP consistency review checklist for new development to demonstrate consistency with the 2045 CAP's strategies, measures, and actions.

ES5.3—Evaluate a program for reducing GHG emissions for new developments that require General Plan amendments.

ES5.4—Establish an Offsite GHG Reduction Program for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment.

[35] A *reach code* is a local building energy code that "reaches" beyond the state's minimum requirements for energy use in building design and construction.

Transportation (T)

Activities within the transportation sector are responsible for the majority of GHG emissions in unincorporated Los Angeles County, as the dominant mode of transportation is vehicles that run on fossil fuels. Land use patterns developed over time—including unincorporated Los Angeles County's road and highway networks, streetscapes, and parking infrastructure—have been designed to prioritize and promote the usage of cars and trucks. The County will address transportation emissions by prioritizing public transportation, walking, biking, and active transit options, and other alternatives to single-occupancy trips. For trips requiring vehicles, the County will focus on advancing zero-emission and near-zero-emission technologies.

Decarbonizing transportation provides many co-benefits for unincorporated Los Angeles County residents, employees, and employers. Many of these benefits have not always reached BIPOC and disadvantaged communities. For example, residents of affordable housing and multifamily housing have not been well served by EV charging infrastructure and low-cost charging opportunities. This can lead to cycles of disinvestment and more expensive gas and electricity bills. The lack of housing and high cost of living in unincorporated Los Angeles County mean that increased costs in transportation expenses could lead to displacement. New and innovative approaches are needed to bring the benefits of EV charging infrastructure and ZEVs to all residents while protecting and increasing affordable housing.

Transportation (T) comprises the following strategies and measures:

Strategy 2: Increase Densities and Diversity of Land Uses Near Transit

- Measure T1: Increase Density Near High-Quality Transit Areas ϙ
- Measure T2: Develop Land Use Plans Addressing Jobs/Housing Balance and Increase Mixed Use ϙ

Strategy 3: Reduce Single-Occupancy Vehicle Trips

- Measure T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips ϙ
- Measure T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation ϙ
- Measure T5: Limit and Remove Parking Minimums

Strategy 4: Institutionalize Low-Carbon Transportation

- Measure T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales Q
- Measure T7: Electrify County Fleet Vehicles Q
- Measure T8: Accelerate Freight Decarbonization Q
- Measure T9: Expand Use of Zero-Emission Technologies for Off-Road Vehicles and Equipment Q

Transportation

Strategy 2: Increase Densities and Diversity of Land Uses Near Transit

2045 VISION

Increased housing opportunities with close and convenient access to destinations such as shopping and employment centers

Strategy Description

This strategy focuses on coordinating land use development that leads to outcomes associated with reduced VMT, such as increased densities near transit, jobs-housing balance, and strategically located land uses that can reduce travel distances for many trip purposes.

Past and Current County Actions

- As of 2021, the County has adopted Transit Oriented District plans for three unincorporated Los Angeles County communities: Willowbrook, West Carson, and West Athens–Westmont.
- In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program.

Alignment with State and Regional Initiatives

- Connect SoCal, SCAG's Regional Transportation Plan/Sustainable Communities Strategy for achieving a 13 percent reduction in per capita passenger vehicle GHG emissions relative to 2005, as required by SB 375.
- The Advanced Clean Cars II Program requires that 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035 and that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 and by 2035 for drayage trucks.

Transportation

Strategy 2: Increase Densities and Diversity of Land Uses Near Transit

MEASURE T1: Increase Density Near High-Quality Transit Areas Q

Annual GHG Emissions REDUCTIONS

By 2030: 27,357

By 2035: 26,019

By 2045: 25,276

(units = $MTCO_2e$)

Estimated COST

$–$$

PERFORMANCE OBJECTIVES

Increase in residential density:

- Implement and complete Housing Element Update rezoning programs to achieve the minimum densities.
- Achieve a minimum of 20 dwelling units (DU) per acre (maximum of 30–150 DU per acre) for HQTAs.
- Locate a majority of residential and employment centers in unincorporated Los Angeles County within 1 mile of an HQTA.
- Achieve a 27 percent increase in DUs within HQTAs.

DESCRIPTION

Increase housing opportunities that are affordable and near transit, to reduce VMT.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T1.1—Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure.

T1.2—Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing.

Transportation

Strategy 2: Increase Densities and Diversity of Land Uses Near Transit

MEASURE T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use Q

Annual GHG Emissions REDUCTIONS

By 2030: 39,184

By 2035: 37,267

By 2045: 36,204

(units = $MTCO_2e$)

Estimated COST

$$

PERFORMANCE OBJECTIVES

- By 2030, achieve a job density of 300 jobs per acre.
- For communities with an imbalance of jobs/housing (±20 percent), develop community plans to identify and quantify strategies for bringing that imbalance below 20 percent.

DESCRIPTION

Increasing density and the mix of land uses can help reduce single-occupancy trips, the number of trips, and trip lengths.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T2.1—Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT.

Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

2045 VISION

A proliferation of travel options that do not require personal vehicle ownership

Strategy Description

This strategy focuses on development of transportation networks that increase the accessibility, comfort, and convenience of active travel modes to help reduce trips made in single-occupancy vehicles.

Past and Current County Actions

- Throughout unincorporated Los Angeles County, 64 miles of bikeways were created between 2012 and 2021, with 3.65 miles in progress. An additional 36 miles of bikeway are planned to be completed by 2025, with 18 miles scheduled to be completed thereafter.
- The County is working with the Los Angeles County Metropolitan Transportation Authority (Metro) on a transit program that prioritizes public transit by creating bus priority lanes, improving transit facilities, reducing transit-passenger time, and providing bicycle parking near transit stations.
- The Countywide Traffic Signal Synchronization Program, instituted in 1988, includes upgrading traffic signal infrastructure and timing to allow for signal synchronization, implementation of pedestrian and bicycle improvements, and improvement of transit operations through more consistent travel times.
- The Department of Regional Planning is currently working on a study to inform the update to parking standards for multifamily residential development with the goal of reducing barriers to investments in multifamily housing production, reducing the overall cost of housing, and helping to lower VMT. After the conclusion of the study, recommendations will be finalized and an ordinance will be prepared to amend the zoning code. Public hearings on the ordinance are anticipated in 2023.

Alignment with State and Regional Initiatives

- Connect SoCal, SCAG's Regional Transportation Plan/Sustainable Communities Strategy for achieving a 13 percent reduction in per capita passenger vehicle GHG emissions relative to 2005, as required by SB 375.

Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

MEASURE T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips Q

Annual GHG Emissions REDUCTIONS

By 2030: 0

By 2035: 2,811

By 2045: 2,730

(units = $MTCO_2e$)

Estimated COST

$$$–$$$$$

PERFORMANCE OBJECTIVES

- Increase bikeway miles 300 percent by 2035.
- Implement the County's Bicycle Master Plan.
- Complete updates to the County's Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans every five years.

DESCRIPTION

Travel options that serve a variety of land uses and trip purposes can help shift some trips away from single-occupancy vehicles.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T3.1—Create a more connected and safer bikeway network by expanding bikeway facilities and implementing protected and separated lanes.

T3.2—Implement and regularly update the County's Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans.

T3.3—Collaborate with Metro and other transit providers to enhance pedestrian and bicycle environments through energy efficient lighting and shading to promote active transportation. Build shade structures at major transit stops, such as those identified in Metro's Active Transportation Strategic Plan, prioritizing communities with high heat vulnerability. Develop and implement a Shaded Corridors Program.

Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

MEASURE T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation Q

Annual GHG Emissions REDUCTIONS

By 2030: 11,465

By 2035: 10,904

By 2045: 10,593

(units = $MTCO_2e$)

Estimated COST

$–$$$$$

PERFORMANCE OBJECTIVES

- By 2030, double transit service hours from 560,000 to 1.12 million.
- By 2030, install bus-only lanes and signal prioritization on all major transit thoroughfares.
- By 2030, ensure that 75 percent of unincorporated Los Angeles County residents live within one-half mile of shuttle or mobility service.

DESCRIPTION

Transit service, micro mobility services (such as bike-share, scooter-share, and drone deliveries), and access to these transportation options can help reduce VMT.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T4.1—Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit,[36] autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles.

T4.2—Collaborate with Metro and other transit providers to install bus-only lanes and/or signal prioritization along major thoroughfares, and work with transit agencies and neighboring jurisdictions to plan and install full bus rapid transit infrastructure along priority corridors, as appropriate.

T4.3—Collaborate with Metro and other transit providers to develop a transportation technology strategy to proactively address how evolving tech-enabled mobility options can support public transit.

T4.4—Collaborate with Metro and other transit providers to set aside maintenance funds to ensure that public transit facilities, including stations and stops, are safe and clean to enhance the transit experience and increase ridership.

T4.5—Collaborate with Metro and other transit providers to develop and implement a transportation demand management (TDM) ordinance that requires future development projects to incorporate measures such as subsidized transit passes and car share.

T4.6—Offer free and/or discounted transit passes for students, youth, seniors, people with disabilities, and low-income populations.

[36] *Micro transit* is public or private multi-passenger transportation services that serve passengers using dynamically generated routes; they provide transit-like service on a smaller, more flexible scale.

Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

MEASURE T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation Q

T4.7—Expand and improve the County's Telecommuting Policy, using data gathered through the alternative work program.

T4.8—Establish temporary and permanent car-free areas.

T4.9—Develop a VMT bank or exchange program.

T4.10—Collaborate with Metro and other transit providers to ensure that all new forms of public transportation (e.g., new bus lines, new light rail service) are low- or zero-emission.

Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

MEASURE T5: Limit and Remove Parking Minimums

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$$–$$$

PERFORMANCE OBJECTIVES

- Reduce parking stipulations to reduce parking supply and encourage transit use.
- Unbundle parking costs to reflect cost of parking.
- Implement parking pricing to encourage “park-once” behavior.

DESCRIPTION

Parking strategies such as parking maximums, unbundling parking, or market-price parking can help reduce VMT.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T5.1—Implement a comprehensive parking reform strategy, which should include, but not be limited to: elimination of minimum parking requirements for all new residential units, establishment of parking maximums within one-half mile of high-quality transit stops, creation and expansion of parking benefit districts, development of planning strategies for transitioning land dedicated to parking to alternative transit and public uses, and incentives for developers to provide less than maximum allowable parking.

Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

2045 VISION

100 percent of all vehicles in unincorporated Los Angeles County have zero carbon emissions

Strategy Description

Motorized vehicles that are needed for travel must transition from internal combustion engines to zero-carbon and near-zero-carbon technologies, such as electric vehicles (EVs) and ZEVs. Expanding access to charging infrastructure will address a key barrier to the adoption of EVs. The County will work to provide access to clean transportation by developing programs that include e-bikes, zero-emission buses and shuttles, and electrified trains. The County will also endeavor to install EVCSs at County properties and in the public right-of-way, require new development to install EVCSs, and develop incentives and requirements for existing buildings to install EVCSs.

This strategy also aims to reduce emissions from diesel- and gasoline- powered off-road equipment, including construction, landscaping, recreational, and commercial and industrial equipment. This strategy increases the use of electric-powered equipment by establishing a goal such that a portion of all equipment is electric-powered. Other technologies include green hydrogen fuel cell and natural gas.

Past and Current County Actions

- In 2008, the Department of Public Works (PW) began the implementation of a three-pronged sustainable pavement treatment approach.
- As of April 2022, the County has deployed approximately 750 EV charging ports across County facilities to support the electrification of its fleet and to increase electric vehicle supply equipment (EVSE) access to employees and the public.
- In 2016, the EV Infrastructure Ordinance was adopted; this ordinance provides an expedited and streamlined permitting process for EV charging infrastructure.
- The Idling Reduction Ordinance, adopted in 2018, amended the zoning code to require signs in on-site loading areas to encourage the reduction of vehicle idling.
- In 2021, the County installed 315 new PowerFlex-networked charging stations with advanced managed charging capability.
- In April 2021, the Board of Supervisors adopted a revised fleet policy that requires the purchase of ZEVs for the County when replacing all County vehicles, to the extent that they are available and meet operational needs.

Alignment with State Initiatives

- Governor's EO B-48-15 (5 million ZEVs on California roads by 2030) and EO N-79-20 (100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035).

Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales (Core) Q

Annual GHG Emissions REDUCTIONS

By 2030: 482,515

By 2035: 820,125

By 2045: 1,535,101

(units = $MTCO_2e$)

Estimated COST

$–$$$

PERFORMANCE OBJECTIVES

Increase the fleetwide percentage of light-duty vehicles in unincorporated Los Angeles County that are ZEVs to:

- 30 percent by 2030
- 50 percent by 2035
- 90 percent by 2045

Increase the sales of new light-duty vehicles in unincorporated Los Angeles County that are ZEVs to:

- 68 percent by 2030
- 100 percent by 2035

Install the following total number of new public and private shared EVCSs:

- 37,000 by 2030
- 74,000 by 2035
- 140,000 by 2045

DESCRIPTION

Increase unincorporated Los Angeles County's ZEV market share and vehicle penetration to the maximum extent feasible to replace internal combustion engine vehicles. Set targets for reducing total gasoline and diesel vehicle fuel sales.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T6.1—Develop a Zero Emission Vehicle Master Plan. Collaborate with other regional agencies and jurisdictions to share infrastructure.

T6.2—Install EVCSs at existing buildings and right-of-way infrastructure throughout unincorporated Los Angeles County.

T6.3—Require all new development to install EVCSs through a condition of approval/ordinance. Residential development must install EVCSs; nonresidential development must install EVCSs at a percentage of total parking spaces.

T6.4—Install EVCSs at County facilities and properties for public, employee, and fleet use, prioritizing locations in frontline, BIPOC, and disadvantaged communities. Complete an assessment of EV charging locations, identifying gaps in publicly accessible stations for frontline, BIPOC, and disadvantaged communities. Provide EV purchase incentive information in multiple languages to frontline communities.

T6.5—Continue to pilot vehicle-grid integration applications at workplaces to maximize the benefits that daytime charging for plug-in electric vehicles (PEVs) can have on the grid, including demand response to reduce peak loads and energy storage during periods of renewable overproduction.

Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales (Core) Q

Install the following total number of new EVCSs at County facilities and properties:

- 5,000 by 2030
- 10,000 by 2035
- 25,000 by 2045

T6.6—Expand electric options for active transportation, such as electric scooters and e-bikes. Provide access to neighborhood electric vehicles, such as golf carts, shared EVs, and others. Develop policies and/or ordinances to expand these options.

T6.7—Increase the use of green hydrogen vehicles. Use biomethane and biogas created from organic waste as a "bridge fuel" to achieve 100 percent green hydrogen and electric vehicles. Consider the use of other zero-emission fuel sources.

Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T7: Electrify County Fleet Vehicles [Q] [M]

Annual GHG Emissions REDUCTIONS

By 2030: 29,743

By 2035: 24,335

By 2045: 10,119

(units = $MTCO_2e$)

Estimated COST

$$$–$$$$

PERFORMANCE OBJECTIVES

Electrify the County bus and shuttle vehicle fleets by 2035.

Increase the fleetwide percentage of light-duty vehicles in the County–owned fleet that are ZEVs to:

- 35 percent by 2030
- 60 percent by 2035
- 100 percent by 2045

Support the state's goal that all new light-duty vehicle fleet purchases, with certain exceptions, will be ZEVs.

DESCRIPTION

Electrify the County bus, shuttle, and light-duty vehicle fleets.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T7.1—Electrify the County bus and shuttle vehicle fleets and partner with transit agencies for group purchasing and siting of shared charging and/or fueling infrastructure. [M]

T7.2—Electrify light-duty County fleet vehicles. [M]

Transportation
Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T8: Accelerate Freight Decarbonization (Core) Q

Annual GHG Emissions REDUCTIONS

By 2030: 86,168

By 2035: 103,528

By 2045: 176,638

(units = $MTCO_2e$)

Estimated COST

$–$$$$

PERFORMANCE OBJECTIVES

Increase the fleetwide percentage of medium- and heavy-duty vehicles in unincorporated Los Angeles County that are ZEVs to:

- 40 percent by 2030
- 60 percent by 2035
- 90 percent by 2045

Increase the fleetwide percentage of medium- and heavy-duty vehicles in the County-owned fleet that are ZEVs to:

- 50 percent by 2030
- 70 percent by 2035
- 95 percent by 2045

Ensure that 100 percent of the drayage truck fleet is ZEV by 2035.

Ensure that 100 percent of sales of medium- and heavy-duty trucks are ZEV by 2045.

Require that all new warehouse loading docks have EVCSs by 2030.

Require that all existing warehouse loading docks have EVCSs by 2030.

DESCRIPTION

Incentivize and implement freight decarbonization technologies, specifically focusing on charging infrastructure.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T8.1—Implement freight decarbonization technologies along highway corridors passing through unincorporated Los Angeles County communities through programs such as zero-emission delivery zones.

T8.2—Create an ordinance requiring new goods movement facilities to install alternative fueling infrastructure.

T8.3—Adopt Building Performance Standards for existing goods movement facilities and reach code requirements for major retrofits and renovations that require alternative fueling infrastructure for medium- and heavy-duty vehicles. Require goods movement facilities to install alternative fueling infrastructure for medium- and heavy-duty vehicles at the point of sale.

T8.4—Streamline permitting of ZEV charging and fueling infrastructure for medium- and heavy-duty vehicles.

T8.5—Electrify the County medium- and heavy-duty vehicle fleet.

Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T9: Expand Use of Zero-Emission Technologies for Off-Road Vehicles and Equipment [Q]

Annual GHG Emissions REDUCTIONS

By 2030: 8,373

By 2035: 21,819

By 2045: 44,964

(units = $MTCO_2e$)

GHG BENEFIT-COST RATIO

$–$$

PERFORMANCE OBJECTIVES

Increase the fleetwide percentage of off-road fleet and equipment in unincorporated Los Angeles County that are ZEVs to:

- 20 percent by 2030
- 50 percent by 2035
- 95 percent by 2045

Increase the fleetwide percentage of construction, agriculture, and manufacturing equipment in the unincorporated Los Angeles County that are ZEVs to:

- 50 percent by 2030
- 75 percent by 2035
- 100 percent by 2045

DESCRIPTION

Prohibit the use of gas- and diesel-powered small (≤25 horsepower) off-road equipment and increase the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

T9.1—Partner with the South Coast Air Quality Management District and Antelope Valley Air Quality Management District to increase the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment.

T9.2—Identify types of ZEV and green hydrogen equipment that are commercially available (e.g., forklifts, loaders, welders, saws, pumps, fixed cranes, air compressors, sweepers, aerial lifts, pressure washers) and require the use of these types of equipment on all new projects through an ordinance or conditions of approval.

T9.3—Require, to the maximum extent feasible, the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment for County projects. [M]

Building Energy and Water (E)

Buildings are central in the County's approach to reducing GHG emissions associated with energy supply and consumption. This category includes a range of strategies aimed at reducing energy use in buildings, decarbonizing the energy and materials used in buildings, and reducing water consumption. The approach combines increasing energy efficiency, electrifying buildings, and decarbonizing building materials.

These actions must apply to both new and existing buildings. A foundational first step for existing buildings is to track and report building energy and water use to raise awareness and highlight opportunities for savings, followed by retrofit programs for efficiency and decarbonization. Green building standards and net zero energy incentives for new developments will significantly reduce GHG emissions. Scaling up energy efficiency programs and developing energy and emissions performance standards for existing and new buildings will reduce overall energy demand, avoiding costly new infrastructure and enabling an easier transition to renewable energy sources.

Water consumption in unincorporated Los Angeles County has a significant carbon footprint because energy is required to collect, treat, store, and convey water to homes and businesses from distant sources. By prioritizing water conservation programs, expanding the County's efforts toward water recycling and reuse, and promoting net zero water developments, the County will simultaneously reduce GHG emissions and lessen communitywide dependency on imported water sources.

Improving the environmental performance of buildings provides multiple co-benefits for occupants. These benefits have not always reached frontline communities. Residents of affordable housing and multifamily housing, in particular, have not been well served by traditional energy retrofit programs, leading to ongoing cycles of disinvestment, higher energy bills, and less healthy indoor air quality. At the same time, many of these same residents are already extremely rent and utility burdened, and COVID-19 has exacerbated these problems. The lack of housing and high cost of living in the region mean that increased costs in household expenses could trigger displacement. New and innovative approaches are needed to bring the benefits of healthy, decarbonized, and resilient buildings to all residents while protecting and increasing affordable housing.

Building Energy and Water (E) comprises the following strategies and measures:

Strategy 5: Decarbonize Buildings

- Measure E1: Transition Existing Buildings to All-Electric Q
- Measure E2: Standardize All-Electric New Development Q
- Measure E3: Other Decarbonization Actions

Strategy 6: Improve Efficiency of Existing Building Energy Use

- Measure E4: Improve Energy Efficiency of Existing Buildings Q

Strategy 7: Conserve Water

- Measure E5: Increase Use of Recycled Water and Graywater Systems
- Measure E6: Reduce Indoor and Outdoor Water Consumption Q

What is Building Decarbonization?

Building decarbonization is a framework for reducing GHG emissions associated with buildings.

Building emissions come from:

DIRECT SOURCES:

- Combustion of fuels for heating and cooking (gas stoves, gas heaters).
- Gas leaks (gas lines in buildings, unlit pilot lights).
- Hydrofluorocarbon leaks (from refrigerators and other compressor-based systems for space conditioning and water heating, during use and disposal).

INDIRECT SOURCES:

- Generation of the electricity used in buildings.

Ways to decarbonize buildings:

1. Replace gas-fueled appliances with efficient electric alternatives.
2. Continue decarbonizing electricity by growing the low-carbon share of the generation portfolio.
3. Foster energy efficiency through incentive programs, appliance standards, building standards, research, and financing.
4. Transition to using better refrigerants and reduce associated leakage.
5. Grow distributed energy resources such as rooftop solar PV and on-site battery storage.
6. Decarbonize the gas system by displacing natural gas with renewable gas produced from carbon-free electricity or existing waste streams.
7. Give building owners and occupants incentives to shift their electricity use in response to the timing of energy costs, GHG emissions intensity, or electricity grid emergencies.

Building Energy and Water

Strategy 5: Decarbonize Buildings

2045 VISION

Zero use of fossil fuels to provide building energy needs

Strategy Description

As noted in Strategy 1, building decarbonization requires two complementary components: procuring clean, renewable sources of energy and shifting building energy loads for heating and cooking to electricity or renewable fuels rather than fossil fuels. In addition to renewable electricity purchased through the CPA over the grid, distributed, on-site renewable energy can be promoted in a variety of ways. Because grid-supplied energy is now cleaner than on-site natural gas use, building electrification and, to some extent, the use of biomethane are key to decarbonization.

Past and Current County Actions

- In 2019, the County adopted the 2020 County of Los Angeles Green Building Standards Code.
- In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that facilitate construction and maintenance of quality housing to enhance livability of neighborhoods.
- In February 2022, the County Board of Supervisors passed a motion to study the feasibility of establishing ZNE standards for major development projects and other large-scale development.
- In March 2022, the Board of Supervisors passed a motion to ensure the equitable decarbonization of buildings though a stakeholder engagement process, studying energy resource and infrastructure needs, and by seeking funding. The motion also directs PW, the Chief Sustainability Office, DRP, and other County departments to provide recommendations for an ordinance or building code changes that would phase out the use of natural gas equipment and appliances in all new residential and commercial construction and substantial renovations, where feasible, starting in 2023.

Alignment with State Initiatives

- California Energy Efficiency Strategic Plan: A roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive Plan is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
- CALGreen Code (Title 24 Building Code): The CALGreen Code establishes mandatory measures for new residential and nonresidential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality.

- Renewables Portfolio Standard (SB 100 and SB 1020): A statewide mandate to increase the proportion of electricity from renewable sources. The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities.
- SB 1206: Mandates a stepped sales prohibition on newly produced high-GWP HFCs to transition California's economy toward recycled and reclaimed HFCs for servicing existing HFC-based equipment.

Building Energy and Water
Strategy 5: Decarbonize Buildings

MEASURE E1: Transition Existing Buildings to All-Electric (Core) Q

Annual GHG Emissions REDUCTIONS

By 2030: 176,072

By 2035: 280,988

By 2045: 477,221

(units = $MTCO_2e$)

Estimated COST

$$$$

PERFORMANCE OBJECTIVES*

Electrify the existing residential building stock:

- 25 percent by 2030
- 40 percent by 2035
- 80 percent by 2045

Electrify the existing nonresidential building stock:

- 15 percent by 2030
- 25 percent by 2035
- 60 percent by 2045

Require Zero Net Energy (ZNE)[37] for all major renovations:

- 50 percent by 2030
- 75 percent by 2035
- 100 percent by 2045

Adopt building performance standards and reach code(s).

Adopt ZNE ordinance.

DESCRIPTION

As the carbon intensity of grid-supplied energy decreases, decarbonization of the electrical grid must be combined with building electrification, shifting the energy load from fossil natural gas to cleaner sources while taking into consideration the varying climate, geography, infrastructure, and sole-source dependency challenges that rural communities and unique industries may face. This measure aims to electrify applicable existing buildings. Biomethane is another preferred alternative to fossil natural gas; however, existing opportunities for the widespread use of biomethane are currently limited. The use of other zero-emission fuel sources for buildings should be considered.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E1.1—Adopt Building Performance Standards for existing buildings and reach code requirements for major retrofits and renovations that require electric water and space heating. Require buildings to retrofit natural gas water and space heating to electric water and space heating at the point of sale.

E1.2—Increase alternatives to natural gas uses, such as for cooking, in existing buildings. Establish carbon intensity limits for existing nonresidential and residential buildings over a certain size.

E1.3—Adopt a ZNE ordinance for building renovations, based on certain criteria (such as commercial facilities with 10,000 square feet of additions). Adopt ZNE Building Performance Standards for certain buildings not undergoing major renovations or retrofits.

E1.4—Create a plan for phased electrification of County facilities. Phase out gas-powered infrastructure and appliances as they need replacement. M

[37] *Zero net energy* is defined by the U.S. Department of Energy as follows: "An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the onsite renewable exported energy." U.S. Department of Energy. 2015. *A Common Definition for Zero Energy Buildings*, September 2015. Prepared by the National Institute of Building Sciences. Available: https://www.energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf. Accessed in January 2021.

Building Energy and Water

Strategy 5: Decarbonize Buildings

MEASURE E1: Transition Existing Buildings to All-Electric (Core) Q

Conduct buildings portfolio analysis and cost feasibility study.

E1.5—Create a comprehensive fund aggregation program to support energy efficiency, decarbonization, and resilience in new and existing affordable housing.

E1.6—Create and resource an energy retrofit accelerator to provide a one-stop shop for guidance, technical support, training, and access to aggregated funds to support building owners and contractors. Target support to low-income communities and affordable housing.

Building Energy and Water

Strategy 5: Decarbonize Buildings

MEASURE E2: Standardize All-Electric New Development Q

Annual GHG Emissions REDUCTIONS

By 2030: 7,452

By 2035: 12.588

By 2045: 22,639

(units = $MTCO_2e$)

Estimated COST

$

PERFORMANCE OBJECTIVES

Require all applicable new buildings will to be all-electric. Provide affordable housing set-aside to offset first cost.

- Residential: 90 percent all-electric by 2030, 95 percent by 2035, and 100 percent by 2045
- Nonresidential: 90 percent all-electric by 2030 (except large industry and possibly food service), 95 percent by 2035, and 100 percent by 2045

Require most new residential and nonresidential buildings to be ZNE beginning in 2030. Include affordable housing set-aside.

- Residential: 90 percent ZNE by 2030
- Nonresidential: 90 percent ZNE by 2030 (except large industry)

DESCRIPTION

This measure aims to electrify all applicable new buildings, while taking into consideration the varying climate, geography, infrastructure, and sole-source dependency challenges that rural communities and unique industries may face.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E2.1—Adopt an ordinance requiring all applicable new buildings to be fully electric with no natural gas hookups. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability.

E2.2—Adopt a ZNE ordinance for all new residential buildings built after 2025 and all new nonresidential buildings built after 2030. Include renter protections for affordable housing. Provide affordable housing set-aside to offset first cost.

E2.3—Adopt CALGreen Code Tier 1 green building standards and identify which Tier 2 standards could be adopted as code amendments.

Building Energy and Water
Strategy 5: Decarbonize Buildings

MEASURE E3: Other Decarbonization Actions

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$-$$$

PERFORMANCE OBJECTIVES

Increase the proportion of biomethane in the utility natural gas mix to:

- 20 percent by 2030
- 30 percent by 2035
- 80 percent by 2045

Use low-carbon, carbon-neutral, or negative-carbon concrete for all new construction; identify carbon intensity limit of concrete.

Replace high-GWP refrigerants with low-GWP refrigerants:

- 15 percent by 2030
- 25 percent by 2035
- 50 percent by 2045

DESCRIPTION

Reduce the life-cycle carbon intensity of building materials and phase out the use of high-GWP refrigerants.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E3.1—Work with utilities to incorporate increasing levels of biomethane into the natural gas mix.
E3.2—Adopt a concrete code for new construction that limits embodied carbon emissions; specify code requirements of carbon intensity limit for concrete.
E3.3—Adopt reach code requirements that include performance standards to limit the amount of embodied carbon associated with construction.
E3.4—Develop a refrigerant management program that establishes a phase-out timeline for high-GWP refrigerants in existing buildings, incentivizes industrial equipment replacement, and specifies requirements for new development to use low-GWP refrigerants.

Building Energy and Water

Strategy 6: Improve Efficiency of Existing Building Energy Use

2045 VISION

All buildings will be zero net energy users

Strategy Description

Increasing the energy efficiency of existing buildings reduces GHG emissions by decreasing the consumption of nonrenewable energy sources, including natural gas and electricity that is not 100 percent carbon-free. Energy efficiency improvements can be achieved through a variety of methods, including energy audits, benchmarking, appliance replacements and rebates, building retrofits, and consumer education. In addition to reducing GHG emissions, energy-efficient building improvements can lower energy bills, create local green jobs, and improve the longevity of existing buildings. The County will improve the energy efficiency of existing buildings through coordination with agencies and organizations, as well as public outreach.

Past and Current County Actions

- In 2019, the Department of Public Works (PW) adopted a Cool Roof Ordinance to amend Title 31 mandating the installation of Tier 2 level cool roofing materials for all projects in which it has been proven to be cost effective.
- The Internal Services Department manages a portfolio of energy efficiency programs that support communities, local governments, commercial businesses, and residential and multifamily property owners. The Internal Services Department administers the Southern California Regional Energy Network (SoCalREN), which supports energy efficiency programs and achieved more than 16 million kilowatt-hours in electricity savings and more than 280,000 therms of natural gas savings in 2021.

Alignment with State Initiatives

- California Energy Efficiency Strategic Plan: A roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive Plan is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
- CALGreen Code (Title 24 Building Code): The CALGreen Code establishes mandatory measures for new residential and nonresidential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality.

Building Energy and Water

Strategy 6: Improve Efficiency of Existing Building Energy Use

MEASURE E4: Improve Energy Efficiency of Existing Buildings [Q]

Annual GHG Emissions REDUCTIONS

By 2030: 22,274

By 2035: 41,255

By 2045: 203,455

(units = $MTCO_2e$)

Estimated COST

$–$$$

PERFORMANCE OBJECTIVES

Reduce building energy use intensity below 2015 levels as follows:

- 20 percent for residential, 15 percent for industrial, and 25 percent for commercial by 2030
- 25 percent for residential and industrial and 35 percent for commercial by 2035
- 50 percent for residential, industrial, and commercial by 2045

Adopt building performance standards and reach code(s).

DESCRIPTION

Retrofit existing building stock to reduce overall unincorporated Los Angeles County energy use.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E4.1—Adopt Building Performance Standards for energy efficiency in existing buildings. Require all buildings to perform energy efficiency retrofits at the point of sale. Expand and enhance the energy efficiency programs offered by the Southern California Regional Energy Network (SoCalREN). Include affordable housing considerations in these requirements and develop additional renter protections and supporting measures (financial support, technical assistance, or other incentives) to limit the amount of first costs being passed on to low-income renters. (See Actions E1.5 and E1.6.)

E4.2—Adopt an energy efficiency ordinance for existing buildings, requiring all buildings over 20,000 square feet to benchmark and report their energy use and demonstrate their pathway to efficiency.

E4.3—Convert existing County-owned heat-trapping surfaces to cool or green surfaces. [M]

Building Energy and Water
Strategy 7: Conserve Water

2045 VISION

Community water consumption that does not exceed unincorporated Los Angeles County's sustainable supply

Strategy Description

The GHG emissions associated with water consumption are the result of the electricity and natural gas used to pump, treat, and convey the water. This strategy aims to reduce GHG emissions by decreasing the total amount of water consumed, as well as the energy intensity of the water consumed.

Past and Current County Actions

- The County continues to hold free Smart Gardening Program public workshops on topics such as composting, water-wise gardening, and organic gardening.
- The County allocated $300,000 for the Waterworks Districts' Water Customer Rebate program in Fiscal Year 2021–2022.
- The passage of Measure W in November 2018 created the County's Safe Clean Water Program.
- In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainability in housing development through programs that include but are not limited to the Priority of Water and Sewer for Affordable Housing.

Alignment with State Initiatives

- SB 606 and AB 1668, requiring urban efficiency standards for indoor use, outdoor use, and water lost to leaks.

Building Energy and Water
Strategy 7: Conserve Water

MEASURE E5: Increase Use of Recycled Water and Graywater Systems

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$–$$$

PERFORMANCE OBJECTIVES

Increase use of alternative water sources such that Unincorporated Los Angeles County demand is met by recycled water graywater, or potable reuse:

- 25 percent by 2030
- 50 percent by 2035
- 90 percent by 2045

Ensure that water demand for agricultural will be recycled or graywater:

- 30 percent by 2030
- 50 percent by 2035
- 80 percent by 2045

Ensure that water demand for industrial will be recycled or graywater:

- 30 percent by 2030
- 50 percent by 2035
- 80 percent by 2045

Implement a successful direct potable reuse project by 2025.

DESCRIPTION

Increasing the use of alternative water sources (e.g., recycled water, graywater, indirect potable reuse) reduces the demand for water sources with higher energy and carbon intensities (e.g., imported water, groundwater).

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E5.1—Require dual waste piping to be installed in new residential developments to allow for future graywater irrigation systems.

E5.2—Require the use of recycled water and graywater for agricultural purposes where recycled water is available. Identify soil and water conservation best practices for agricultural uses. Work with Los Angeles County Sanitation Districts (LACSD) and other water suppliers to assess the feasibility of new recycled water facilities for unserved communities.

E5.3—Require the use of recycled water and graywater for industrial purposes where recycled water is available. Identify water conservation best practices for industrial uses. Work with LACSD and other water suppliers to assess the feasibility of new recycled water facilities for unserved communities.

E5.4—Require the use of recycled water and graywater for landscaping irrigation purposes where recycled water is available.

E5.5—Partner with the County water districts and retail suppliers to explore the potential for widespread utilization of direct potable reuse through pilot projects.

Building Energy and Water
Strategy 7: Conserve Water

MEASURE E6: Reduce Indoor and Outdoor Water Consumption [Q]

Annual GHG Emissions REDUCTIONS

By 2030: 10,575

By 2035: 15,122

By 2045: 11,764

(units = $MTCO_2e$)

Estimated COST

$–$$

PERFORMANCE OBJECTIVES

Reduce total water use to less than:

- 110 gallons per capita per day (GPCD) by 2030
- 100 GPCD by 2035
- 85 GPCD by 2045

Reduce outdoor landscaping water use to 10 percent by 2030, 20 percent by 2035, and 50 percent by 2045.

Reduce municipal water consumption 10 percent by 2030, 20 percent by 2035, and 50 percent by 2045.

DESCRIPTION

Reducing indoor and outdoor water consumption is essential as the state experiences longer and more severe droughts. Not only will water conservation improve regional resiliency, but it will also reduce GHG emissions through the reduction of energy consumption associated with the processing, treatment, and conveyance of water and wastewater.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E6.1—Develop a water conservation ordinance for new development (public and private). Utilize Leadership in Energy and Environmental Design (LEED) or Sustainable SITES Initiative (SITES) standards. A future ordinance may include a net zero water requirement for new greenfield development.

E6.2—Adopt a water efficiency ordinance for existing buildings, requiring all buildings over 20,000 square feet to benchmark and report their water use and demonstrate their pathway to efficiency.

E6.3—Incentivize residents to replace water-intensive landscaping, such as decorative turf, with water-conserving landscaping and/or California native plants through a new ordinance along with education and incentive programs.

E6.4—Implement strategies to improve water efficiency and increase water conservation at County facilities. [M]

E6.5—Integrate water-related programs into the County's affordable housing preservation program to protect the housing affordability of units and to keep the units fit for their purpose in a changing climate.

Waste (W)

The County will reduce GHG emissions from waste in a manner that prioritizes overall environmental benefit. This starts with expanded efforts to reduce and reuse waste at the source. Incentives and educational programs will be used to increase awareness and bolster participation in recycling programs. Organic waste, which is responsible for the vast majority of GHG emissions in the waste sector, will be addressed through source reduction, donation of edible food, and composting. Organic waste will also be addressed through waste conversion technologies such as anaerobic digestion and biomass conversion, which produce biogas that can be used to produce heat and electricity, pipeline gas, and other beneficial products such as compost and fertilizer. At wastewater treatment plants, biogas will be captured and converted into electricity.

Waste (W) comprises the following strategy and measures:

Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream

- Measure W1: Institutionalize Sustainable Waste Systems and Practices [Q]
- Measure W2: Increase Organic Waste Diversion

Waste

Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream

2045 VISION

Zero waste sent to landfill

Strategy Description

The County will reduce GHG emissions from waste in a manner that prioritizes overall environmental benefit. This starts with expanded efforts to reduce and reuse waste at the source. Incentives and educational programs will be used to increase awareness and bolster participation in recycling programs. Organic waste, which is responsible for the vast majority of GHG emissions in the waste sector, will be addressed through source reduction, donation of edible food, and composting, as well as through waste conversion technologies such as anaerobic digestion and biomass conversion, which produce biogas that can be used to produce heat and electricity, pipeline gas, and other beneficial products like compost and fertilizer. At wastewater treatment plants, biogas will be captured and converted into electricity.

Past and Current County Actions

- The Conversion Technology Program aims to increase the current in-County capacity of waste diversion from 600 tons per day (tpd) to 3,000 tpd by 2035.
- In 2010, an ordinance was adopted prohibiting the distribution of single-use plastic carryout bags at certain stores and requiring the stores to charge 10 cents for each paper bag provided to a customer.
- In 2018, the County Department of Public Works (PW) launched the Food Donation Recovery and Outreach Program (Food DROP) to facilitate the recovery of edible food to feed those in need instead of being disposed.
- PW is in the process of updating the Construction and Demolition Debris Recycling and Reuse Ordinance to increase the construction and demolition debris recycling requirement from 50 percent to 70 percent for projects in unincorporated Los Angeles County.
- In 2021, an ordinance was adopted requiring that single-use accessories (straws, utensils, condiment cups) be distributed to customers only upon request. In 2022, the Board of Supervisors passed a follow-up ordinance that limits the use of single-use plastic food service ware in unincorporated Los Angeles County to reusable, recyclable, or compostable options.
- As of 2022, there are four landfill gas-to-energy facilities in unincorporated Los Angeles County, with a total installed (rated) renewable energy generation capacity of 96 megawatts.

Alignment with State Initiatives

- SB 1383: Established emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants, including methane by 40%, HFC gases by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030.
- AB 341: Requires each city, county, and regional agency to develop a source reduction and recycling element of an integrated waste management plan containing specified components, including a source reduction component, a recycling component, and a composting component.
- AB 1826: Requires any business, defined as a commercial or public entity, that generates more than 4 cubic yards of commercial solid waste per week or is a multifamily residential dwelling of 5 units or more, to arrange for recycling services.

Waste

Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream

MEASURE W1: Institutionalize Sustainable Waste Systems and Practices (Core) Q

Annual GHG Emissions REDUCTIONS

By 2030: 154,514

By 2035: 248,362

By 2045: 342,934

(units = $MTCO_2e$)

Estimated COST

$–$$

PERFORMANCE OBJECTIVES

Increase the total unincorporated Los Angeles County waste diversion rate to:

- 85 percent by 2030
- 90 percent by 2035
- 95 percent by 2045

Reduce the disposal of single-use plastics in landfills.

Increase the Construction and Demolition Debris Ordinance to 70 percent diversion.

Increase percentage of construction and demolition debris reused in new projects (private, public).

DESCRIPTION

Undertake actions that result in sustainable waste systems. Responsible and sustainable waste practices are learned behaviors that the County can facilitate through outreach, education, and mandates. Increase diversion of recyclable materials and organics from landfills through ordinances, service improvements, education and outreach, and promotion of product stewardship and markets for material reuse. An increased diversion rate indirectly reduces the demand for virgin materials, which reduces the life-cycle carbon intensity of any resulting products. Through action taken at the County level, waste-conscious habits and thoughtful consumption can become the default.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

W1.1—Identify best practice waste pricing programs to reduce waste generation to the maximum extent feasible, including but not limited to differential prices for waste based on amount generated in the residential sector and reforms to tipping rate structures.

W1.2—Implement, enforce, and expand to the maximum extent feasible the single-use plastics ordinance and polystyrene ban.

W1.3—Increase the diversion requirements in the County's Construction and Demolition Debris Ordinance and allow the use of recycled construction materials in new projects.

Waste

Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream

MEASURE W2: Increase Organic Waste Diversion

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$–$$$$

PERFORMANCE OBJECTIVES

Maximize organic waste diversion to support unincorporated Los Angeles County's overall waste diversion rate goals identified in Measure W1.*

** As the overall diversion rate increases through implementation of Measure W1, the amount of organic waste disposed in landfills decreases over time.*

DESCRIPTION

Provide services for diverting yard waste, food scraps, and compostable paper from landfills to beneficial uses, including compost, food rescue, and energy production.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

W2.1—Require organic waste generators to properly manage organic waste as per the Organic Waste Disposal Reduction Ordinance. Improve upon and expand existing practices and programs to minimize organic waste disposal in landfills.

W2.2—Develop organic waste collection, management, and diversion programs for constituents in unincorporated communities and all County operations; establish a contamination monitoring plan for organic waste programs.

W2.3—Collaborate with the Los Angeles County Sanitation Districts and other waste and wastewater service providers to utilize unused anaerobic digestion capacity of existing wastewater treatment plants and solid waste facilities to generate vehicle fuel (electricity and/or biomethane) from newly diverted organic waste. Develop a strategy for using bioenergy created from recycled organic waste.

W2.4—Provide regional leadership for organic waste processing capacity planning and infrastructure development.

W2.5—Enhance and expand the County's existing Food DROP food donation and redistribution program to divert edible food from landfills and make it available to food insecure communities.

Agriculture, Forestry, and Other Land Use (A)

The Agriculture, Forestry, and Other Land Use sector strategies focus on conservation and restoration of existing forest lands and urban forests to sequester carbon and support local ecosystems. These strategies promote clean water, air, and food, in addition to a reduced urban heat island effect. Preserving and supporting unincorporated Los Angeles County's forests, parks, and working lands is essential to reducing climate change impacts, as well as protecting the communities, economies, and ecosystems that depend on the land.

Agriculture, Forestry, and Other Land Use (A) comprises the following strategies and measures:

Strategy 9: Conserve and Connect Wildlands and Working Lands

- Measure A1: Conserve Forests, Woodlands, Shrublands, Grasslands, Desert, and Other Carbon-Sequestering Wildlands and Working Lands Q

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

- Measure A2: Support Regenerative Agriculture
- Measure A3: Expand Unincorporated Los Angeles County's Tree Canopy and Green Spaces Q

Agriculture, Forestry, and Other Land Use

Strategy 9: Conserve and Connect Wildlands and Working Lands

2045 VISION

Achieve a net gain in carbon storage in unincorporated Los Angeles County's wildlands and working lands through management and restoration

Strategy Description

Forests, chaparral shrublands, grasslands, deserts, and wetlands serve as carbon sinks that can sequester CO_2 that results from human activity. When these natural and working lands are converted to residential and other urbanized uses, that stored CO_2 is released into the atmosphere. Conserving and restoring these lands keeps carbon in the ground and provides a multitude of benefits, from maintaining biodiversity in the Significant Ecological Areas to preserving the character of unincorporated Los Angeles County's rural areas. Other important factors that enhance carbon storage and carbon sequestration potential include prioritizing habitat connectivity and strategically restoring degraded habitats and fallowed agriculture lands. This strategy will also consider optimal ecosystem services that are the result of the functional integrity of healthy ecosystems; prioritize the preservation of contiguous heterogeneous habitats to benefit biodiversity and help improve the chances of maintaining ecosystem health and carbon sequestration and storage capacity; and incorporate connectivity to optimize carbon storage sequestration.

Past and Current County Actions

- In 2018, the Department of Regional Planning (DRP) amended the zoning code to allow selected accessory uses within utility rights-of-way, such as parks, open space, and limited agricultural uses, with development standards and streamlined review procedures.
- In 2019, DRP amended the zoning code to guide development to areas that would create the least impact on environmental resources on private properties.

Alignment with State Initiatives

- California 2030 Natural and Working Lands Climate Change Implementation Plan: a collaborative effort by the California Natural Resources Agency, California Department of Food and Agriculture, California Environmental Protection Agency, CARB, and Strategic Growth Council to coordinate all natural and working lands programs under a united approach to maintain a resilient carbon sink and improve air and water quality, water quantity, wildlife habitat, recreation, and other benefits.
- AB 1757 of 2022: Requires the California Natural Resources Agency (CNRA), in collaboration with CARB, other state agencies, and an expert advisory committee, to determine a range of targets for natural carbon sequestration, and for nature-based climate solutions, that reduce GHG emissions in 2030, 2038, and 2045 by January 1, 2024. These targets must support state goals to achieve carbon neutrality and foster climate adaptation and resilience.

- SB 27 of 2021: Requires CNRA, in coordination with other state agencies, to establish the Natural and Working Lands Climate Smart Strategy by July 1, 2023. This law also requires CARB to establish specified CO_2 removal targets for 2030 and beyond as part of its Scoping Plan.

Agriculture, Forestry, and Other Land Use

Strategy 9: Conserve and Connect Wildlands and Working Lands

MEASURE A1: Conserve Forests, Woodlands, Shrublands, Grasslands, Desert, and Other Carbon-Sequestering Wildlands and Working Lands Q

Annual GHG emissions REDUCTIONS

By 2030: 8,953

By 2035: 17,906

By 2045: 26,858

(units = $MTCO_2e$)

Estimated COST

$$–$$$

PERFORMANCE OBJECTIVES

Reduce the amount of natural land converted for urbanized uses:

- 25 percent by 2030 (53 hectares conserved annually)
- 50 percent by 2035 (106 hectares conserved annually)
- 75 percent by 2045 (159 hectares conserved annually)

Conserve and restore natural forest land:

- 2,000 acres by 2030
- 4,000 acres by 2035
- 6,000 acres by 2045

Acres of wildland managed for wildfire risk reduction and carbon stock savings:

- 10,000 acres by 2030
- 20,000 acres by 2035
- 50,000 acres by 2045

DESCRIPTION

Preserve, conserve, and restore agricultural lands, working lands, rangelands, forest lands, wetlands, and other wildlands in unincorporated Los Angeles County.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

A1.1—Develop an open space conservation and land acquisition strategy that prioritizes wildlife connectivity to conserve native habitats for carbon sequestration.

A1.2—Employ ecosystem-appropriate vegetation management of wildlands based on the best available science to reduce unintended human ignitions and wildfire risk and prevent carbon loss in forest lands. Leverage tools such as the Unified Land Management Plan and the Countywide Community Wildfire Prevention Plan.

Agriculture, Forestry, and Other Land Use

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

2045 VISION

Farms and urban forests that sequester carbon, conserve water, and enhance biodiversity

Strategy Description

Agricultural practices can either strip the environment of its rich resources or work to maintain and utilize the resources in ways that benefit farms and the environment. Farming practices that increase biodiversity, enrich soils, improve watersheds, and enhance ecosystem services are known as *regenerative agriculture practices*. These practices can have positive impacts for the climate, reducing GHG emissions and supporting practices that are environmentally friendly. Adding tree canopy cover and green spaces back into developed areas can help sequester carbon and reduce the urban heat island effect.

Past and Current County Actions

- The County adopted the Tree Planting Ordinance in 2016 to establish new tree planting requirements for projects to provide environmental benefits.
- The Tree Committee of the County's Healthy Design Workgroup coordinates interdepartmental efforts to preserve, maintain, and expand unincorporated Los Angeles County's urban forest in low-income, tree-poor neighborhoods.
- In 2016, the Department of Regional Planning (DRP) amended the zoning code to incentivize growing local foods on private property.
- In 2021, the County was awarded $1.5 million by the state to develop an Urban Forest Management Plan.

Alignment with State Initiative

- California 2030 Natural and Working Lands Climate Change Implementation Plan.

Agriculture, Forestry, and Other Land Use

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

MEASURE A2: Support Regenerative Agriculture

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

$–$$$$

PERFORMANCE OBJECTIVES

- Reduce the quantity of synthetic fertilizers used/applied.
- Increase the number of acres of cover crops using regenerative agricultural techniques.

DESCRIPTION

Promote agricultural practices that sequester carbon and restore soil quality, biodiversity, ecosystems health, and water quality.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

A2.1—Create fallow and field resting incentives to reduce bare-fallow land by adding cover crops and promoting crop rotation for active agricultural sites to improve soil quality and limit risks of nutrient erosion, pollutant runoff, and yield reduction. Create a carbon farming plan with the primary objectives of carbon removal and regenerative agriculture.

A2.2—Provide compost and/or organic or nonsynthetic fertilizer to farmers free of charge or at a discounted rate.

Agriculture, Forestry, and Other Land Use

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

MEASURE A3: Expand Unincorporated Los Angeles County's Tree Canopy and Green Spaces Q

Annual GHG Emissions REDUCTIONS

By 2030: 4,602

By 2035: 7,080

By 2045: 10,310

(units = $MTCO_2e$)

Estimated COST

$–$$

PERFORMANCE OBJECTIVES*

Plant new trees as follows:

- 130,000 by 2030
- 200,000 by 2035
- 270,000 by 2045

Develop an Urban Forest Management Plan.

** The performance objectives provided here serve as a general metric and may be refined upon completion of the Urban Forest Management Plan.*

DESCRIPTION

Create an Urban Forest Management Plan to plant trees, increase unincorporated Los Angeles County's tree canopy cover, add green space, and convert impervious surfaces. Focus tree planting on frontline communities with insufficient tree cover and green spaces.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

A3.1—Create and implement an equitable Urban Forest Management Plan that prioritizes: (1) tree- and parks-poor communities; (2) climate- and watershed-appropriate and drought/pest-resistant vegetation; (3) appropriate watering, maintenance, and disposal practices; (4) provision of shade; and (5) biodiversity.

A3.2—Expand tree planting on County property and in the public right-of-way within unincorporated Los Angeles County. Encourage tree planting on private property.

A3.3—Develop an ordinance requiring that all removed native trees be replaced by an equal or greater number of new trees.

This page intentionally left blank

CHAPTER 4

Implementation and Monitoring

4.1 Implementation Plan

Reaching and maintaining carbon neutrality will require a strong commitment to implementation. Everyone has a role to play in shaping a healthy, sustainable, and climate-resilient future. Implementing the 2045 CAP will require coordination across County departments; collaboration with community partners, residents, and other stakeholders; identification of funding opportunities; and integration of 2045 CAP implementation with other County planning and administrative processes.

To ensure successful implementation of the 2045 CAP, the County will do the following, as depicted in Figure 4-1.

Figure 4-1: Equity Guiding Principles

1. Create a 2045 CAP Implementation Team

The Chief Sustainability Office and DRP will develop a cross-departmental 2045 CAP implementation team to include representatives from County departments listed as lead or partner agencies for the 2045 CAP actions. The team will help County departments implement listed actions, identify funding, and monitor annual progress.

2. Prioritize Equity in Implementation and Monitoring

Implementation efforts will continue to prioritize equity.

The following actions will guide implementation of the 2045 CAP:

(1) Engage in meaningful public involvement that is anti-racist and inclusive.

(2) Prioritize funding and action in frontline communities.

(3) Design transportation and land use solutions to eliminate disproportionate burdens on frontline communities.

(4) Partner with local and nonprofit organizations to assist low-income, disadvantaged, and vulnerable communities on information and resource access.

3. Confirm Funding Sources

Successful implementation will require a commitment of resources and confirmation of additional funding sources. Funding efforts will include the following:

- **Grant Opportunities:** Federal, state, and regional agencies and organizations provide grants and loans, as well as planning assistance, for investments in a variety of climate-related projects. Given the State of California's leadership on setting emissions reduction targets and in creating the Cap-and-Trade Program, numerous grant opportunities are offered by different state agencies. Through the Healthy Design Workgroup Grants Committee, the County will continue to review grant opportunities to obtain additional funding that supports climate action implementation.
- **County General Fund:** Annual budgeting allocations fund departmental operations for staff resources to implement programs. Programs that need funding beyond staff resources are assessed through the annual budgeting and prioritization process. Additional funding may be secured through fee programs or discretionary budget allocations.
- **Federal, State, Regional, and Utility Programs and Incentives:** The County will strongly encourage residents and businesses to participate in incentives that promote energy efficiency, water conservation, and the use of EVs.

As discussed in Chapter 3, funding sources for the five core measures have already been identified. These funding sources are presented in Table 3-3.

A list of potential partners, programs, and funding sources that would support 2045 CAP implementation is provided in **Appendix G**. Note that programs and funding sources for implementing GHG emissions reduction programs are developing rapidly and may change substantially from year to year.

4. Build Partnerships

Partnerships are critical to successful implementation of the 2045 CAP. Partners are listed in many of the 2045 CAP actions, and the County will seek to continue to build additional partnerships and engage with stakeholders on an ongoing basis.

5. Study Optimal Implementation

To optimize implementation of the 2045 CAP measures and actions, the County will evaluate and identify priority areas for implementation, GHG emissions reduction potential, physical infrastructure needs, regulatory and legal requirements, up-front and ongoing costs and savings, funding opportunities, barriers and obstacles, impacts on and benefits for frontline communities, and needed partnerships, among other topics. Studies initiated by a CAP action will include additional analysis to identify necessary additional support for frontline communities. Identifying frontline communities' concerns early in the process can help secure funding and shape a project to best fit local needs.

The outcome of the studies may determine the achievable performance goals and actions needed to implement 2045 CAP measures. Performance goals and actions may differ from those identified in the 2045 CAP once the details are analyzed. The 2045 CAP identifies several specific studies needed, including a carbon removal feasibility study (Measure ES1), a solar, battery storage, and microgrid study (Measure ES4), and a buildings portfolio analysis and cost feasibility study (Measure E1). Many more studies would likely be needed.

6. Conduct Engagement

Community engagement and input is a crucial component of successful CAP implementation. The County will conduct community engagement and seek input to ensure that the implementation of CAP measures and actions in the form of programs, policies, ordinances, and projects considers the needs of residents and businesses along with climate objectives. Many of the actions throughout the 2045 CAP, including development of new ordinances, programs, and funding sources, will require targeted community engagement. The County will approach these efforts as opportunities to strengthen relationships and improve the capacity of frontline communities to participate in decisions that affect their lives. The County will work to build partnerships with community-based organizations (CBOs) and other partners in frontline communities that can help build a bridge of two-way communication based on reciprocity and respect. The County will work to help build the capacity of CBOs so that they can better support this effort over time, including by providing grants or other funding to CBOs to support engagement work.

The success of the 2045 CAP's implementation can be furthered by local actions and programs that increase awareness of climate change, promote sustainable actions, and provide a framework for change. The County will develop and strengthen community education and awareness about the 2045 CAP through various promotional efforts to communicate program development and gauge the success of 2045 CAP implementation. The 2045 CAP Implementation Team will guide community engagement that promotes community measures and leads to local contributions for emissions reductions. The community engagement program could incorporate a voluntary local climate challenge that recommends actions for residents, businesses, and other local stakeholders to take, with the goal of creating a more climate-conscious and climate-friendly County and a healthier environment. Recommended actions should prioritize community goals of energy efficiency, waste reduction, water savings, clean transportation, and increasing climate change awareness.

7. Adopt or Update Ordinances, Codes, and/or Regulations

Some actions may represent a continuation of a recently enacted ordinance, while others require a new ordinance. For any new ordinances developed pursuant to a measure or action, there will be a public input and review process and the County will consider many factors: feasibility, cost, exceptions such as weather or climate limitations, and others. The County generally follows these steps when adopting a new ordinance:

(1) Research, evaluate, and/or study.

(2) Engage the public and stakeholders (gather information).

(3) Draft the ordinance, code, or regulation.

(4) Publish the draft ordinance, code, or regulation for public review.

(5) Revise the draft ordinance, code, or regulation in response to public comments.

(6) Conduct formal public hearings (includes a public comment period).

(7) Adopt the ordinance, code, or regulation.

(8) Implement and enforce the ordinance, code, or regulation.

8. Monitor and Report

The 2045 CAP Implementation Team will prepare annual progress reports of the status of the strategies, measures, and actions. This includes community and municipal measures and actions. More information regarding this step is listed in Section 4.2.

4.2 Monitoring and Reporting

GHG Inventory and CAP Updates

The 2045 CAP is a dynamic document that will be monitored and evaluated for its effectiveness on an ongoing basis. Monitoring allows the County to make timely adjustments to implementing actions as technologies, federal and state programs, and circumstances change. Flexibility in implementation is necessary to allow the County to evolve its strategies. The County will update the GHG emissions inventory and the CAP every five years.

Monitoring

The County will monitor each 2045 CAP measure and action using the metrics identified in Appendix E, *Implementation* (see Table E-1), subject to data availability. The County will also track, measure, and improve the performance of measures and actions to reduce emissions from its operations, subject to data availability.

The County will track the status of implementation (e.g., initiated, ongoing, completed), assess the effectiveness of the measures and actions in the 2045 CAP against the performance objectives, and make adjustments to the tracking metrics as needed. Tracking the performance objectives for each quantified GHG reduction measure on a periodic basis will inform the County and community over time as to how the 2045 CAP implementation actions are working toward achieving GHG reduction targets and will help the County re-prioritize actions in future updates to the 2045 CAP.

Tracking the metrics summarized in **Table 4-1** will assist the County in monitoring the progress in meeting climate strategies and goals. Tracking metrics are intended to identify potential data that may be used to analyze GHG emission reductions. See Appendix E for the complete list of tracking metrics that may contribute to progress monitoring. Many of these indicators will be tracked by the Chief Sustainability Office as part of implementation of the OurCounty Sustainability Plan, or are reported by state or County agencies. The list of indicators will be assessed and revised periodically and administratively based on data availability.

Reporting

The County will report on the implementation progress of the 2045 CAP as part of the General Plan Annual Progress Report. In the first two years of implementation, the County will identify where further efforts and additional resources may be needed. In this initial phase, the County will identify the data sources needed to report on the effectiveness of implementation.

The County will also develop a dashboard as part of the reporting on implementation of the 2045 CAP. This dashboard will be updated on an annual basis and will provide information on the ongoing efforts of the CAP actions through data and spatial displays. The dashboard will also track equity-based metrics to measure progress of implementation in frontline communities compared to unincorporated Los Angeles County as a whole.

Table 4-1: Tracking Metrics for Monitoring Progress of 2045 Climate Action Plan Implementation

STRATEGY	TRACKING METRICS
Strategy 1: Decarbonize the Energy Supply	• Number of oil and gas operations/wells decommissioned and remediated • Emissions reductions achieved through oil and gas closures • Decommissioning dates and details (i.e., fuel consumption and GHG emissions) for the Olive View Cogeneration Facility • Number of CCS systems constructed • CARB Pollution Mapping Tool data for natural gas leakage • Participation rates in CPA's Green Power option or SCE's Green Rate option • Renewable energy portfolio (percent share) • Electricity grid emission factor(s) • Rooftop solar PV installations for existing multifamily residential buildings and existing commercial buildings • Rooftop solar PV installations for new multifamily residential buildings • Rooftop solar PV installations for new commercial buildings • Kilowatts of solar capacity installed on County facilities • Total installed distributed energy resource capacity (e.g., kilowatts of solar capacity installed) • Total battery capacity installed • Total community electricity storage capacity • Number and capacity of microgrids established • Number and performance of energy efficiency and resilience projects implemented in facilities providing critical community services • Number and type of projects performing CAP consistency review • Dollars invested into future Offsite GHG Reduction Program, and estimated energy savings and GHG emissions reductions • Energy benefits (all items above) delivered in frontline communities
Strategy 2: Increase Densities and Diversity of Land Uses Near Transit	• Commute mode share • Population residing within HQTAs (and dwelling units within HQTAs) • Jobs located within HQTAs • Total acres of commercial or industrial zones in HQTAs that can support jobs • Residential density (DU/acre) for new development • Daily VMT and vehicle trips • Percent of new units in TODs that provide affordable housing

Table 4-1: Tracking Metrics for Monitoring Progress of 2045 Climate Action Plan Implementation (cont.)

STRATEGY	TRACKING METRICS
Strategy 3: Reduce Single-Occupancy Vehicle Trips	• Commute mode share • Bikeway miles • Pedestrian walkway miles • Total transit service hours • Decrease in transit headways • Miles of bus-only lanes constructed • Number of free and discounted transit passes issued • Number of intersections with signal prioritization • Number and location of shade and lighting projects planned and completed • Parking pricing information, including unbundling • Number and location of car-free areas • Number of ZEV buses and shuttles in operation • Percent change in parking supply; number of new and expanded parking benefit districts • Collisions involving pedestrians or bicyclists • Transit and active transportation benefits (see all items above) delivered in frontline communities
Strategy 4: Institutionalize Low-Carbon Transportation	• EV, ZEV, and near-zero-emission vehicle registrations for light-, medium-, and heavy-duty vehicles, including transit fleets, County-owned fleet vehicles, and drayage trucks • Total sales of gasoline and diesel fuel within unincorporated Los Angeles County • Total number of gas stations decommissioned • Number of public, shared private, and private EVCSs installed • Number of EVCSs installed at County facilities • Number of e-scooters/e-bikes made available • Number of neighborhood EVs made available • Quantity of biomethane and biogas sold and consumed in unincorporated Los Angeles County • Number of County-owned ZEV buses, shuttles, and fleet vehicles in operation • Number of off-road equipment pieces electrified • Off-road vehicle and equipment fleet count, type, and fuel type • Quantity and fraction of new EV charging infrastructure provided in frontline communities
Strategy 5: Decarbonize Buildings	• Number of existing buildings retrofitted with electric appliances (residential and nonresidential) • Number of new fully electric and ZNE buildings constructed (residential and nonresidential) • Total consumption of electricity and natural gas for buildings by sector • Proportion of biomethane in utility natural gas mix • Quantity of low-carbon concrete and materials used in new construction • Dollars invested into future Impact Mitigation Fund, and estimated energy savings and GHG emission reductions • Quantity of low-GWP refrigerants used/charged • Percent and quantity of building decarbonization projects in frontline communities, multifamily developments, and affordable housing

Table 4-1: Tracking Metrics for Monitoring Progress of 2045 Climate Action Plan Implementation (cont.)

STRATEGY	INDICATORS
Strategy 6: Improve Efficiency of Existing Building Energy Use	• Number of new buildings that meet 2022 Title 24 requirements (and future Title 24 requirements) • Number of buildings and homes retrofitted for energy efficiency • Total electricity and natural gas savings achieved through retrofits • Total consumption of electricity and natural gas for buildings by sector • Number and area of cool and green roofs installed • Percent and quantity of energy efficiency projects in frontline communities, multifamily developments, and affordable housing
Strategy 7: Conserve Water	• Unincorporated Los Angeles County demand met by recycled water, graywater, or direct potable reuse • Per capita water consumption • Number of buildings and homes retrofitted with water-efficient devices • Percent and quantity of building water retrofit projects in frontline communities, multifamily developments, and affordable housing
Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream	• Annual waste tons to landfill and per-capita waste generation and landfilling rate • Landfill diversion rate and disposal tonnage • Total landfill emissions • Organic waste diversion rate and disposal tonnage • Annual quantity of organic waste treated in composing and anaerobic digestion facilities • Recycling diversion rate and disposal tonnage • Reported GHG emissions from waste-to-energy facilities (biogenic carbon dioxide and non-biogenic methane and nitrous oxide) • Recycling and composting services provided in frontline communities, multi-family developments, and affordable housing
Strategy 9: Conserve and Connect Wildlands and Working Lands	• Acres of wildlands conserved • Acres of wildlands restored • Acres of farmlands conserved • Acres of farmlands restored • Acres of wildlands managed for wildfire risk reduction and carbon stock savings • Acres of urban and peri-urban agriculture created • Percent and quantity of projects completed in frontline communities, multifamily developments, and affordable housing
Strategy 10: Sequester Carbon and Implement Sustainable Agriculture	• Quantity of compost used as fertilizer • Quantity of organic and synthetic fertilizers used/applied • Increase in number of acres of cover crops using regenerative agricultural techniques • Number of new trees planted • Urban tree canopy area • Area of impervious surfaces converted to urban forest • Urban tree canopy cover and number of new trees planted in frontline communities, multi-family developments, and affordable housing

Abbreviations: CAP = climate action plan; CARB = California Air Resources Board; CCS = capture and carbon and sequestration; County = County of Los Angeles government; CPA = Clean Power Alliance; DU = dwelling unit; EV = electric vehicle; EVCS = electric vehicle charging station; GHG = greenhouse gas; GWP = global warming potential; HQTA = high quality transit area; PV = photovoltaic; SCE = Southern California Edison; TOD = Transit Oriented District; unincorporated Los Angeles County = the unincorporated areas of Los Angeles County; VMT = vehicle miles traveled; ZNE = Zero Net Energy

4.3 CEQA

CEQA and the 2045 Climate Action Plan

CEQA and its implementing regulations (the CEQA Guidelines) require state and local government agencies to consider the environmental impacts of projects over which they have discretionary authority before taking action on those projects.

A program environmental impact report (EIR) is a type of EIR that evaluates a plan or program that has multiple components or actions that are related either geographically; as logical parts in the chain of contemplated actions; in connection with application of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program; or as individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways (California Code of Regulations Title 14, Section 15168[a]). It evaluates the general impacts of the plan or program but does not examine the potential site-specific impacts of the many individual projects that may be proposed in the future consistent with the plan.

The Program EIR describes planned activities that would implement the 2045 CAP and addresses related environmental impacts comprehensively, based on the information that was reasonably available at the time the environmental review process was initiated. The Program EIR is a "first-tier" document that anticipates later environmental review of specific projects.[38]

Later activities undertaken in furtherance of 2045 CAP measures and actions would be examined in light of the Program EIR to determine whether additional environmental review is needed. For example, if a later activity would have effects that are not examined in the EIR, then preparation of either a project-specific Negative Declaration or EIR could be appropriate. That later analysis may tier to the Program EIR as provided in CEQA Guidelines Section 15152. The County would incorporate the mitigation measures developed in the Program EIR into later activities in furtherance of 2045 CAP measures and actions. Alternatively, if DRP finds (pursuant to CEQA Guidelines Section 15162) that no subsequent Negative Declaration or EIR would be required, then the County could approve the activity as being within the scope of the Program EIR, and no additional environmental review would be required.

Consistency Review Checklist

The 2045 CAP constitutes a qualified GHG emissions reduction plan under CEQA. Future non-CEQA-exempt projects requiring discretionary approvals may demonstrate consistency with the 2045 CAP (as a qualified GHG emissions reduction plan) if they are consistent with the General Plan, the 2045 CAP's future growth projections, and the GHG emissions reduction measures. Projects consistent with the CAP would not require additional GHG emissions analysis or mitigation under CEQA Guidelines Section 15183.5(b)(2), provided that the project's environmental document identifies 2045 CAP requirements that are applicable to the project, and, for those

[38] *Tiering* is defined in CEQA Guidelines Section 15385 as referring "to the coverage of general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs or ultimately site-specific EIRs incorporating by reference the general discussions and concentrating solely on the issues specific to the EIR subsequently prepared. Tiering is appropriate when the sequence of EIRs is from a…program EIR to a program, plan, or policy EIR of lesser scope or to a site-specific EIR."

requirements that are not binding or enforceable, incorporates these requirements as mitigation measures.

The 2045 CAP Consistency Checklist **(Appendix F**) assists with determining project consistency with the 2045 CAP. The 2045 CAP Consistency Checklist provides individual projects the opportunity to demonstrate that they are reducing GHG emissions; it also ensures that future projects facilitated by the 2045 CAP would achieve their proportion of emissions reductions consistent with the assumptions of the 2045 CAP. Project consistency with the 2045 CAP is demonstrated by incorporating the emissions reduction measures included in the 2045 CAP that apply to new projects.

To demonstrate consistency with the 2045 CAP, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emissions reduction measures. The project review checklist will be used in one two ways: (1) For projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for streamlined project-specific CEQA GHG analysis; or (2) for projects required or electing to prepare project-specific CEQA GHG analyses, to demonstrate that all feasible applicable checklist measures or alternative project emissions reduction measures have nevertheless been implemented, either as project features or as GHG mitigation measures.

Offsite GHG Reduction Program

Action ES5.4 would establish an Offsite GHG Reduction Program (Offsite Program) for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment. This program would be used in tandem with the 2045 CAP Consistency Checklist for projects that propose GHG emissions reduction measures as alternatives to those identified in Table F-1 of the 2045 CAP Consistency Checklist, or that propose to include additional GHG emissions reduction measures beyond those described in Table F-1. Such projects must not otherwise be required by law or regulation and would not have happened on the 2045 CAP's proposed schedule but for the requirements placed on the project by the 2045 CAP Checklist. Section F.4 of Appendix F includes a framework for the forthcoming Offsite Program.

Developing a local voluntary off-site reduction program and associated GHG mitigation market will help the County provide local benefits.[39] CARB supports the idea of "off-site GHG mitigation" in Appendix D of the 2022 Scoping Plan for projects that have maxed-out their on-site GHG reduction actions: "If implementation of all feasible on-site GHG reduction measures is insufficient to reduce a project's impact to a less-than-significant level, the State recommends that the lead agency next explore options to fund or implement ***local***, off-site direct GHG reduction strategies."[40]

[39] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality.* Appendix D, "Local Actions." November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed January 2023.

[40] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality.* Appendix D, "Local Actions." November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed January 2023.

Carbon Removal and Sequestration

The 2045 CAP shows that unincorporated Los Angeles County can reduce emissions to 85 percent below 1990 levels by 2045 through numerous aggressive, forward-looking strategies and measures, but the 2045 CAP alone will not be enough for unincorporated Los Angeles County to achieve carbon neutrality. As discussed in Section 3.2 above, even with CAP implementation, there will still be almost 850,000 $MTCO_2e$ of residual emissions in 2045. To achieve carbon neutrality, all remaining emissions must be compensated for by removing carbon from the atmosphere. According to the 2022 Scoping Plan, "Carbon removal and sequestration will be an essential tool to achieve carbon neutrality, and the modeling clearly shows there is no path to carbon neutrality without carbon removal and sequestration."[41] The 2022 Scoping Plan includes CO_2 removal and carbon capture targets of 20 million metric tons of CO_2 ($MMTCO_2$) and 100 $MMTCO_2$ by 2030 and 2045, respectively. A slate of legislation on carbon removal and sequestration was passed in 2022, including AB 1279, SB 905, SB 1137, and AB 1757 (see Table 1-2 above).

Action ES1.3 requires the development of a carbon removal strategy that considers direct air capture and carbon and sequestration (CCS). CCS will be an essential component of the County's carbon neutrality strategy. The first step would be to assess the feasibility of various carbon removal tools within areas of unincorporated Los Angeles County. This would include CCS, mechanical carbon removal, and nature-based carbon sequestration. The strategy would assess regional and statewide partnerships and programs, given that regional collaboration has the potential to address barriers to carbon removal and expand opportunities for successful local reductions of GHG emissions. Regional collaboration can also lend support to lead agencies and air districts as they seek opportunities for local GHG reduction programs; for example, the San Luis Obispo County Air Pollution Control District, County of Santa Barbara, County of Ventura, City of Santa Barbara, City of San Luis Obispo, and Community Environmental Council formed a tactical Regional GHG Collaborative Group to understand and identify opportunities for local carbon sequestration and GHG reduction projects.[42]

Evolving state regulations, programs, and financial incentives will provide new opportunities for the County to compensate for any residual emissions that cannot be directly eliminated. For example, almost $9 billion in in carbon capture and sequestration support was included in the $1 trillion Infrastructure Investment and Jobs Act of 2021, which includes funding to establish four direct air capture hubs. SB 27 of 2021 will provide carbon removal projects via an in-state project registry, which will serve as a database of projects in the state that drive climate action on natural and working lands. SB 905 of 2022 requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CCUS and CO_2 removal projects and technology; these projects could also support the County's aspirations to achieve carbon neutrality.

[41] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16. Available: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan. Accessed in December 2022.

[42] California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality.* Appendix D, "Local Actions." November 16, 2022. Available: https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf. Accessed January 2023.

Carbon Offsets/Credits Feasibility Study

Measure ES5, *Establish GHG Requirements for New Development*, assesses the feasibility of developing a GHG offsets/credits program that would help enable the County to achieve its long-term aspirational goal of carbon neutrality by 2045, in the event that the strategies and measures in the 2045 CAP are insufficient to attain the County's carbon neutrality goal.

An offsets/credits program is not a 2045 CAP strategy, measure, or action currently proposed for implementation. The future offsets/credits program differs from the Offsite Program described above in that the offsets/credits program would consider the use of offset credits outside of the boundaries of unincorporated Los Angeles County, while the Offsite Program only encompasses projects within unincorporated Los Angeles County. Further, offset credits are not currently permitted to be used as alternative project emissions reduction measures for new development pursuant to the 2045 CAP Consistency Checklist. The offsets/credits program would be considered for potential implementation later, and only after completion of the feasibility study.

The potential offsets/credit program would be designed to be consistent with applicable CEQA case law requirements, including requirements that offsets be enforceable, real, permanent, quantifiable, verifiable, and additional. The potential offsets/credits program would provide clear, objective, and measurable performance standards for all allowable GHG offsets. For any potential future GHG offsets/credits program evaluated by the County, the County would prioritize implementation of offsets generated within or close to Los Angeles County.