APPENDIX 2.1-E

California Department of Fish and Wildlife, *Additional Environmental Analysis, Section 2, Global Climate Change / GHG Emissions, November 2016*

2 GLOBAL CLIMATE CHANGE/GREENHOUSE GAS EMISSIONS

This section presents a summary of the current state of climate change science and greenhouse gas (GHG) emissions sources in California; a summary of applicable laws, regulations, and executive orders (EOs); quantification of project-generated GHG emissions; and discussion about their potential contribution to the cumulative impact of global climate change. The significance of the GHG emission impact of implementing the Newhall Ranch Resource Management and Development Plan (RMDP) and Spineflower Conservation Plan (SCP), collectively called the project herein, is assessed prior to the consideration of mitigation measures. Mitigation measures to reduce a potentially significant GHG impacts are described, based on independent review and analysis by CDFW, in consultation with ARB, of information and materials submitted by the project applicant.

Through the implementation of mitigation measures, including both emission reduction actions and offset projects/credits, the project applicant has committed to achieve zero net GHG emissions to eliminate the project's contribution of GHG emissions to the cumulative impact of climate change. The analysis in this section evaluates whether substantial evidence exists to demonstrate the feasibility and reliability of achieving the proposed zero net GHG emissions. Project emissions are analyzed at full buildout, which is planned to occur in 2030.

Table 2-1, shows project-generated GHG emissions, itemized by sector, including the unmitigated emissions, proposed reductions by mitigation measures, and post-mitigation emissions. Detailed analysis of project emissions and mitigation measures is provided in Section 2.3, Environmental Impacts and Mitigation Measures.

Table 2-1 Summary of Unmitigated and Post-Mitigation Annual Greenhouse Gas Emissions Associated with the Project at Full Buildout in the Planned Buildout Year (2030)

Emissions Activity/Mitigation Measure	Emissions (MT CO_2e/year)		
	Unmitigated	Reduction	Post Mitigation[1]
Mobile Sources	403,814		
		201,803	
			202,011
Electricity[2]	39,393		
		44,274	
			-4,880[3]
Natural Gas[2]	43,386		
		35,194	
			8,192
Area Sources	367		
		0	
			367
Water Consumption and Wastewater Treatment	8,190		
		0[4]	
			8,190
Solid Waste Generation	23,179		
		0[4]	
			23,179

Table 2-1 Summary of Unmitigated and Post-Mitigation Annual Greenhouse Gas Emissions Associated with the Project at Full Buildout in the Planned Buildout Year (2030)

Emissions Activity/Mitigation Measure	Emissions (MT CO_2e/year)		
	Unmitigated	Reduction	Post Mitigation[1]
Vegetation Removal	1,335		
		1,335	
			0
Construction	6,437		
		6,437	
			0
Sub-Total Annual Emissions (without MM 2-13)[5, 6]	**526,103**	**289,043**	**237,059**
MM 2-13 GHG Reductions		**-237,059**	
Total Annual Emissions	**526,103**		**0**

Notes: MT CO_2e/year = metric tons of carbon dioxide equivalent per year; TDV=Time Dependent Valuation; CEC=California Energy Commission; ZNE=Zero Net Energy

[1] Post mitigation emissions are calculated by subtracting estimated reductions from mitigation measures for each emission source from the unmitigated emission quantities, i.e., Post Mitigation Emissions = Unmitigated Emissions – Emissions Reductions.

[2] Reported unmitigated electricity and natural gas emissions are combined emissions from the CalEEMod output and the swimming pool calculations. To reflect compliance with the 2016 Title 24 Standards, CalEEMod default values were adjusted. The ZNE mitigation measures are split by assuming 78 percent of the mitigation will offset electricity and 22 percent will offset natural gas, consistent with actual emissions reductions from the 2016 Title 24 Standards. Emissions reductions from offsite building retrofits are split assuming 50 percent electricity reduction and 50 percent natural gas reduction. Refer to Technical Report Section 2.3.2 and Tables 2-13a through 2-14b of AEA Appendix 1 for more detailed assumptions.

[3] Emissions reductions from direct and indirect energy consumption appear as a negative to represent TDV energy savings from use of photovoltaics combined with variations in natural gas pricing consistent with CEC's TDV model to achieve ZNE. Refer to Technical Report Tables 4-1a through 4-2d and Technical Report Appendix J of AEA Appendix 1 for more detail.

[4] Emissions reductions from the area sources and water and wastewater treatment sectors were achieved through incorporation of emissions reducing project design features, and, therefore, are not quantified as mitigation reductions.

[5] Sub-Total Annual Emissions shown do not yet account for compensatory reductions proposed by the project applicant through use of direct measures and/or purchase of offset credits required by the GHG Reduction Plan in MM 2-13 except for MM 2-10. The project applicant has proposed commitment to achieve zero net GHG emissions, which would include direct measures and the use of offsets. Please refer to Section 2.3 for further explanation.

[6] Summarized emissions by mitigation measure are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

2.1 ENVIRONMENTAL SETTING RELEVANT TO GHG EMISSIONS

2.1.1 Greenhouse Gas Emissions and Climate Change

Global climate change refers to changes in average climatic conditions (e.g., temperature, wind patterns, precipitation, and storms). Global warming, which is one aspect of climate change, is the observed increase in the average temperature of the Earth's surface and atmosphere. One identified cause of global warming is an increase of GHGs in the atmosphere; these gases allow the sun's rays to enter the Earth's atmosphere but trap the energy that is radiated back into space, resulting in a warming of the atmosphere called the "greenhouse effect."

THE PHYSICAL SCIENTIFIC BASIS

Emissions of carbon dioxide (CO_2) are a leading cause of global climate change, with other pollutants such as methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons, and sulfur hexafluoride also contributing. (See Health & Saf. Code, § 38505(g).) The magnitude of GHG impacts on global climate change differs because each GHG has a different global warming potential (GWP) (i.e., certain compounds have, on a pound-for-pound basis, greater contributions to global climate change than others). The impact of

each GHG is measured as a combination of the volume of its emissions and its GWP using one pound of CO_2 as the common equivalent measure of GWP. (CO_2 has the greatest impact on global climate change because of the relatively large quantities of CO_2 emitted into the atmosphere.) Thus, GHG emissions are typically measured in terms of megagrams or metric tonnes (MT) of CO_2 equivalent (CO_2e). For the purposes of this analysis, a "tonne" refers to a metric ton (i.e., 1,000 kilograms or 2,204.6 pounds). GHG emissions are typically expressed as metric tons of carbon dioxide equivalent (MT CO_2e), where emissions of other GHGs are normalized with respect to the GWP of CO_2.

GREENHOUSE GAS EMISSION SOURCES

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors (ARB 2014a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (ARB 2014a). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution (CO_2 dissolving into the water), respectively, two of the most common processes for removing CO_2 from the atmosphere.

The existing project site generally consists of vacant land, some agricultural uses, water wells, active oil and gas operations, abandoned oil wells, and associated access roads. As illustrated in Table 2.1-1, Summary of Existing On-Site GHG Emissions, the existing condition emissions inventory is estimated at approximately 11,021 MT CO_2e per year. Detailed calculations are shown in Technical Report Table ES-1 and Technical Report Appendix A, contained in AEA Appendix 1.

Table 2.1-1 Summary of Existing On-Site GHG Emissions

Emissions-Generating Activity	Existing Emissions (MT CO_2e/year)
Methane emissions associated with oil wells	3,790
Energy use associated with oil wells	3,682
Energy use associated with water	2,987
N_2O emissions associated with fertilizer use	412
Emissions associated with diesel fuel usage	152
Total Existing On-Site GHG Emissions	**11,021**

Notes: MT CO_2e/year = metric tons of carbon dioxide equivalent per year; N_2O=nitrous oxide

Source: Modeling conducted by Ramboll Environ in 2016. See Technical Report Appendix A, contained in AEA Appendix 1 for detailed calculations.

2.1.2 Effects of Climate Change on the Environment

Globally, climate change has the potential to impact numerous environmental resources through anticipated, though uncertain, impacts related to future air temperatures and precipitation patterns.

Scientific modeling predicts that the continued emissions of GHGs at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. At the end of the 21st century, global surface temperature change is likely to exceed 1.5°C (relative to 1850-1900 levels) in all of the four assessed climate model projections but one (Intergovernmental Panel on Climate Change [IPCC] 2014).

The understanding of the role that GHG emissions plays on global climate trends is complex and involves varying uncertainties and a balance of different impacts. In addition to uncertainties about the extent to which human activity rather than solar or volcanic activity is principally responsible for increased warming, there also is evidence that some human activity has cooling, rather than warming, impacts, as discussed in publications by IPCC. IPCC is the leading international and intergovernmental body for the assessment of climate change and was established – in 1988 – by the United National Environment Programme and World Meteorological Organization to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. Nonetheless, when all impacts and uncertainties are considered together, there is general scientific consensus that human activity contributes significantly to global climate change.

Acknowledging uncertainties regarding the rate at which anthropogenic (i.e., human-caused) GHG emission may continue to increase, and the impact of such emissions on climate change, IPCC devises emission scenarios that use various assumptions about the rates of economic development, population growth, and technological advancement over the course of the next century. These uncertainties are attributable to various factors under human control, such as future population growth and the locations of that growth; the amount, type, and locations of economic development; the amount, type, and locations of technological advancement; adoption of alternative energy sources; legislative and public initiatives to curb emissions; and public awareness and acceptance of methods for reducing emissions. For the IPCC Fifth Assessment Report, a set of four new scenarios, denoted Representative Concentration Pathways (RCP), were developed. RCPs are based on a combination of integrated assessment models, simple climate models, atmospheric chemistry and global carbon cycle models. The four RCPs include a mitigation scenario, two stabilizing scenarios, and one scenario with very high GHG emissions. "The RCPs can thus represent a range of 21st century climate policies, as compared with the no-climate policy of the Special Report on Emissions Scenarios (SRES) used in the AR3 and the AR4."

While the projected impacts of global climate change on weather and climate are uncertain and likely to vary regionally, the following impacts are expected by IPCC:

- it is very likely that the Arctic sea ice cover will continue to shrink and thin, with the Northern Hemisphere spring snow cover and global glacier volume also decreasing;
- it is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales, with heat waves occurring at a higher frequency and duration;
- global surface temperature change for the end of the 21st century is likely to exceed 1.5°C relative to 1850 to 1900 for all RCP scenarios except the mitigation scenario. It is likely to exceed 2°C for the highest forcing scenario and one stabilizing scenario, and more likely than not to exceed 2°C for the remaining stabilizing scenario. Warming will continue beyond 2100 under all RCP scenarios except the mitigation scenario;
- the global ocean will continue to warm during the 21st century, with heat penetrating from the surface to the deep ocean and affecting ocean circulation;
- further uptake of carbon by the ocean will increase ocean acidification;
- changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions; and
- most aspects of climate change will persist for many centuries even if GHG emissions cease entirely.

Physical conditions beyond average temperatures could be indirectly affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature

are expected to result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the California Department of Water Resources (DWR) projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050 (DWR 2008:4). An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events (California Natural Resources Agency [CNRA] 2012:5). This scenario would place more pressure on California's levee/flood control system.

Another outcome of global climate change is sea level rise. Sea level rose approximately seven inches during the last century and, assuming that sea-level changes along the California coast continue to track global trends, sea level along the state's coastline in 2050 could be 10-18 inches higher than in 2000, and 31 to 55 inches higher by the end of this century (CNRA 2012: 9).

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available (CNRA 2012: 11, 12).

Changes in precipitation patterns and increased temperatures are expected to alter the distribution and character of natural vegetation and associated moisture content of plants and soils. An increase in frequency of extreme heat events and drought are also expected. These changes are expected to lead to increased frequency and intensity of large wildfires (CNRA 2012: 11).

To protect the state's public health and safety, resources, and economy, CNRA — in coordination with other state agencies — has updated the *2009 California Climate Adaptation Strategy* with the 2014 *Safeguarding California: Reducing Climate Risk* plan (CNRA 2014). Additionally, in March 2016, CNRA released *Safeguarding California: Implementation Action Plans*, a document that shows how California is acting to convert the recommendations contained in the 2014 *Safeguarding California* plan into action. The 2016 *Action Plans* document is divided by ten sectors (i.e., agriculture, biodiversity and habitat, emergency management, energy, forestry, land use and community development, oceans and coastal resources and ecosystems, public health, transportation, and water), and shows the path forward by presenting the risks posed by climate change, the adaptation efforts underway, and the actions that will be taken to safeguard residents, property, communities, and natural systems.

Substantial work has been done at the international and national level to evaluate climatic impacts, and climate change and its potential impacts have been studied extensively in California. Cal-Adapt is a climate change scenario planning tool developed by the California Energy Commission (CEC) and the University of California Berkeley Geospatial Innovation Facility. Cal-Adapt currently downscales global climate model data to local and regional resolution under two emissions scenarios; the A-2 scenario represents a business-as-usual (BAU) future emissions scenario, and the B-1 scenario represents a lower GHG emissions future. According to Cal-Adapt, annual average temperatures in Los Angeles County are projected to rise by 3.8-6.4°F by 2100, with the range based on low- and high-emissions scenarios (Cal-Adapt 2016).

2.2 REGULATORY SETTING

2.2.1 Federal

CLEAN AIR ACT

In *Massachusetts v. Environmental Protection Agency* (2007) 549 U.S. 497, the U.S. Supreme Court held that the U.S. Environmental Protection Agency (EPA) has authority under the Clean Air Act (CAA) to regulate CO_2 emissions if those emissions pose an endangerment to the public health or welfare.

In 2009, EPA issued an "endangerment finding" under the CAA, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to GHG emissions. These findings provide the basis for adopting national regulations to mandate GHG emission reductions under the CAA.

To date, EPA has exercised its authority to regulate mobile sources that reduce GHG emissions via the control of vehicle manufacturers, as discussed immediately below (see "Federal Vehicle Standards"). The EPA also has adopted standards that set a national limit on GHG emissions produced from new, modified, and reconstructed power plants, and has issued the Clean Power Plan, which is targeted toward the reduction of carbon emissions from existing power plants. Under the Clean Power Plan, EPA set state-specific interim and final performance rates for two subcategories of fossil fuel-fired electric generation units: fossil fuel-fired electric steam generating units and natural gas-fueled combined cycle generating units. The Clean Power Plan requires states to develop and implement plans that ensure that the power plants in their state – either individually, together or in combination with other measures – achieve the interim performance rates over the period of 2022 to 2029 and the final performance rates, rate-based goals or mass-based goals by 2030. In February 2016, the U.S. Supreme Court stayed implementation of the Clean Power Plan pending judicial review.

FEDERAL PLAN TO REDUCE GHG EMISSIONS BY 2025

In 2015, the U.S. State Department submitted the nation's GHG emissions reduction target to the United Nations Framework Convention on Climate Change. The submission, referred to as an Intended Nationally Determined Contribution, is a formal statement of the U.S. target to reduce the nation's emissions by 26 to 28 percent below 2005 levels by 2025.

The target is the culmination of a process that examined opportunities under existing regulatory authorities to reduce GHG emissions in 2025 from all sources in every economic sector. Several U.S. laws, as well as existing and proposed regulations thereunder, are relevant to the implementation of the U.S. target, including the CAA (42 U.S.C. § 7401 et seq.), the Energy Policy Act (42 U.S.C. § 13201 et seq.), and the Energy Independence and Security Act (42 U.S.C. § 17001 et seq.) (The White House 2015).

FEDERAL VEHICLE STANDARDS

In response to the *Massachusetts v. Environmental Protection Agency* decision, in 2007, the Bush Administration issued EO 13432 directing EPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the National Highway Traffic Safety Administration (NHTSA) issued a final rule regulating fuel efficiency for and GHG emissions from cars and light-duty trucks for model year 2011; and, in 2010, EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016.

In 2010, President Obama issued a memorandum directing the same federal agencies to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 to 2025 light-duty vehicles. The proposed standards are projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon (mpg) if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 to 2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles.

In August 2016, EPA and NHTSA adopted the next phase (Phase 2) of the fuel economy and GHG standards for medium- and heavy-duty trucks, which apply to vehicles with model year 2018 and later (EPA 2016). In response to EPA's adoption of the Phase 2 standards, ARB staff plan to propose a Phase 2 program for California, most likely in late 2016 or 2017 (ARB 2016a).

ENERGY INDEPENDENCE AND SECURITY ACT

The Energy Independence and Security Act of 2007 (EISA) facilitates the reduction of national GHG emissions by requiring the following:

- increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs between 2012 and 2014; requiring approximately 200 percent greater efficiency for light bulbs, or similar energy savings, by 2020; and
- while superseded by EPA and NHTSA actions described above, (i) establishing mpg targets for cars and light trucks and (ii) directing NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of the EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

2.2.2 State

Numerous laws, plans, and regulations that require GHG emissions reductions have been implemented or are under development in California. This comprehensive statewide framework is summarized below.

EXECUTIVE ORDER S-3-05

In 2005, former Governor Arnold Schwarzenegger signed EO S-3-05, which established the following GHG emission reduction goals for California:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

In adopting Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, and Senate Bill (32), the Global Warming Solutions Act of 2006: emissions limit, discussed below, the Legislature did not adopt the 2050 horizon-year goal from EO S-3-05.

ASSEMBLY BILL 32, THE CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006

AB 32 (Nunez, 2006), the California Global Warming Solutions Act of 2006, was enacted after considerable study and expert testimony before the Legislature. The heart of AB 32 is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020 (Health & Saf. Code, § 38550). To achieve this reduction

mandate, AB 32 requires ARB to adopt rules and regulations in an open public process that achieve the maximum technologically feasible and cost-effective GHG reductions.

AB 32 charges ARB to monitor and regulate sources of GHG emissions to reduce the state's emissions level. In December 2007, ARB approved 427 million MT CO_2e as the total statewide GHG 1990 emissions level and 2020 emissions limit. This limit is an aggregate statewide limit, rather than sector- or facility-specific, and is in accordance with Health & Safety Code Section 38550.

Per Health & Safety Code Section 38561(b), ARB also is required to prepare, approve, and amend a scoping plan that identifies and makes recommendations on "direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives for sources and categories of sources that [ARB] finds are necessary or desirable to facilitate the achievement of the maximum feasible and cost-effective reductions of greenhouse gas emissions by 2020."

ARB CLIMATE CHANGE SCOPING PLAN

In 2008, ARB approved the *Climate Change Scoping Plan: A Framework for Change* (2008 Scoping Plan) in accordance with Health & Safety Code Section 38561. During the development of the 2008 Scoping Plan, ARB created a planning framework that is comprised of eight emissions sectors: (1) transportation; (2) electricity; (3) commercial and residential; (4) industry; (5) recycling and waste; (6) high GWP gases; (7) agriculture; and, (8) forest net emissions. It establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions from the eight emissions sectors to 1990 levels by 2020. In the Scoping Plan, ARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level; i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations (BAU).

To achieve the necessary GHG reductions to meet AB 32's 2020 target, ARB developed a series of reduction measures in the Scoping Plan covering a range of sectors and activities. Broadly, the reduction measures can be separated into capped sectors (i.e., covered by the Cap-and-Trade Program) and uncapped sectors. Emissions from capped sectors, which include the transportation, electricity, industrial, commercial, and residential sectors of the economy, were fixed under the rules of the Cap-and-Trade Program, and the majority of policy proposals developed by ARB and other state agencies pursuing GHG emissions-reducing strategies are designed to secure reductions from these sectors.

In 2011, ARB introduced the *Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (2011 Final Supplement)*, which contains the main strategies California will implement to achieve reduction from the state's projected 2020 emission level under a BAU scenario. ARB's revised 2020 projection takes into account the economic downturn that occurred in 2008, and includes reductions anticipated from the Renewable Portfolio Standard (RPS) and Advanced Clean Cars (ACC) (ARB 2015).

In May 2014, ARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate the progress that has been made between 2000 and 2012 (ARB 2014a:4 and 5). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (ARB 2014a:ES-2). The update also reports the trends in GHG emissions from various emission sectors.

Currently, ARB is preparing a 2030 Target Scoping Plan Update to address EO B-30-15 and SB 32, and specifically Governor Brown's statewide GHG emissions reduction target for 2030, as discussed below.

SENATE BILL 375

SB 375 (Steinberg, 2008), the Sustainable Communities and Climate Protection Act, coordinates land use planning, regional transportation plans, and funding priorities to reduce GHG emissions from passenger vehicles through better-integrated regional transportation, land use, and housing planning that provides easier access to jobs, services, public transit, and active transportation options. SB 375 specifically requires

the Metropolitan Planning Organization (MPO) relevant to the project area (here, the Southern California Association of Governments [SCAG]) to include a Sustainable Communities Strategy (SCS) in its Regional Transportation Plan (RTP) that will achieve GHG emission reduction targets set by ARB by reducing vehicle miles traveled (VMT) from light-duty vehicles through the development of more compact, complete, and efficient communities.

EXECUTIVE ORDER B-30-15

In April 2015, Governor Brown signed EO B-30-15, which established the following GHG emission reduction goal for California: by 2030, reduce GHG emissions to 40 percent below 1990 levels. This EO also directed all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in EO S-3-05 (see discussion above). Additionally, the EO directed ARB to update its Scoping Plan (see discussion above) to address the 2030 goal. Therefore, in the coming months, ARB is expected to develop statewide inventory projection data for 2030, and identify reduction strategies capable of securing emission reductions that allow for achievement of the EO's new interim goal.

SENATE BILL 32 AND ASSEMBLY BILL 197, STATUTES OF 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which are aimed at California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to requiring ARB to ensure that a statewide GHG emissions are reduced to at least 40 percent below the AB 32 goal of 1990 levels no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the state's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

AB 197 amended the existing Health and Safety Code sections and established new statutory directions, including the following provisions. Section 9147.10 establishes a six-member Joint Legislative Committee on Climate Change Policies to ascertain facts and make recommendations to the Legislature. ARB is required to appear before this committee annually to present information on GHG emissions, criteria pollutants, and toxic air contaminants from sectors covered by the Scoping Plan. Section 38562.5 requires that ARB consider social cost when adopting rules and regulations to achieve emissions reductions, and prioritize reductions at large stationary sources and from mobile sources. Section 38562.7 requires that each Scoping Plan update identify the range of projected GHG and air pollution reductions and the cost-effectiveness of each emissions reduction measure.

ADVANCED CLEAN CARS PROGRAM

In 2012, ARB adopted the ACC program, an emissions-control program for passenger vehicles and light-duty truck for model years 2017–2025, thereby continuing the regulatory framework established under the Pavley standards beyond model year 2016. The program combines the control of smog, soot, and GHG emissions with requirements for greater numbers of zero emission vehicles. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions.

LOW CARBON FUEL STANDARD

EO S-1-07, as issued by former Governor Arnold Schwarzenegger, called for a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by ARB by 2020. Carbon intensity is a measure of the GHG emissions associated with the various production, distribution and use steps in the "lifecycle" of a transportation fuel. In response, ARB adopted the Low Carbon Fuel Standard (LCFS) regulations in 2009, which became fully effective in April 2010. Thereafter, a lawsuit was filed challenging ARB's adoption of the regulations; and, in 2013, a court order was issued

compelling ARB to remedy substantive and procedural defects of the LCFS adoption process under CEQA (*POET, LLC v. ARB* (2013) 217 Cal.App.4th 1214). However, the court allowed implementation of the LCFS to continue pending correction of the identified defects. In September 2015, ARB re-adopted the LCFS regulations.

PAVLEY REGULATIONS

AB 1493 (Pavley, 2002) required ARB to adopt regulations to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks for model years 2009–2016. In September 2004, and pursuant to AB 1493, ARB approved regulations (which are often referred to as the "Pavley standards") to reduce GHG emissions from new motor vehicles beginning with the 2009 model year. In September 2009, ARB adopted amendments to the Pavley standards to reduce GHG emissions from new motor vehicles through the 2016 model year.

ZERO EMISSIONS VEHICLES

Zero emission vehicles (ZEVs) include plug-in electric vehicles, such as battery electric vehicles and plug-in hybrid electric vehicles, and hydrogen fuel cell electric vehicles.

In 2012, Governor Brown issued EO B-16-2012, which calls for the increased penetration of ZEVs into California's vehicle fleet to help California achieve a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. In furtherance of that statewide target for the transportation sector, the EO also calls upon ARB, CEC, and the California Public Utilities Commission (CPUC) to establish benchmarks that will: (1) allow over 1.5 million ZEVs to be on California roadways by 2025, and (2) provide the state's residents with easy access to ZEV infrastructure.

In furtherance of those goals, in February 2013, the Governor's Interagency Working Group on ZEVs issued the *2013 ZEV Action Plan: A roadmap toward 1.5 million zero-emission vehicles on California roadways by 2025*. Additionally, in May 2014, the National Renewable Energy Laboratory issued the *California Statewide Plug-In Electric Vehicle Infrastructure Assessment* (Infrastructure Assessment report) prepared at the request of the CEC. In the Infrastructure Assessment report, CEC noted that "can't miss" ZEV charging locations are residential and workplace areas.

California is incentivizing the purchase of ZEVs through implementation of the Clean Vehicle Rebate Project, which is administered by a non-profit organization (The Center for Sustainable Energy) for ARB and currently subsidizes the purchase of passenger near-zero and ZEVs as follows:

- Hydrogen Fuel Cell Electric Vehicles: $5,000
- Battery Electric Vehicles: $2,500
- Plug-In Hybrid Electric Vehicles: $1,500
- Neighborhood Electric Vehicles and Zero Emission Motorcycles: $900

In its 2014 First Update to the Scoping Plan, ARB recognized that the light-duty vehicle fleet "will need to become largely electrified by 2050 to meet California's emission reduction goals" (ARB 2014a:48). Accordingly, ARB's ACC program – summarized above – requires about 15 percent of new cars sold in California in 2025 to be a plug-in hybrid, battery electric, or fuel cell vehicle (ARB 2014a:47).

SHORT-LIVED CLIMATE POLLUTANT REDUCTION STRATEGY

SB 605 (Lara, Chapter 523, Statutes of 2014) directed ARB to developed comprehensive short-lived climate pollutant (SLCP) strategy, in coordination with other state agencies and local air quality management and air pollution control districts. Governor Brown has identified reductions in SLCP emissions as one "pillar" to meet the goals of AB 32. ARB staff released a proposed SLCP Strategy in April 2016. Subsequently in September 2016, the Legislature passed and Governor Brown signed Senate Bill 1383 (Lara, Chapter 395, Statutes of

2016) mandating ARB to take certain specific actions with regard to the SLCP strategy. Specifically, it mandated that ARB, no later than January 1, 2018, approve and begin to implement the SLCP strategy developed under Health and Safety Code section 39730 to achieve specified targets identified for each of the pollutants and after carrying out certain procedures and analyses. In response to this new mandate, ARB is revising the SLCP Strategy to reflect the requirements of the bill. SB 1383 identifies specific reduction targets for three SLCPs (i.e., black carbon, fluorinated gases, and methane), which the SLCP Strategy will address.

SENATE BILL X1-2 (2011) AND SENATE BILL 350 (2015)

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond.

Most recently, Governor Edmund G. Brown signed into legislation SB 350 in October 2015, which requires retail seller and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030, with interim goals of 40 percent by 2024, and 45 percent by 2027.

CALIFORNIA BUILDING EFFICIENCY STANDARDS (TITLE 24, PART 6)

Title 24, Part 6 of the California Code of Regulations (CCR) regulates the design of building shells and building components. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. CEC's 2016 Building Energy Efficiency Standards (2016 Building Standards), which become effective on January 1, 2017, are the most current version of these standards.

CPUC, CEC, and ARB also have a shared, established goal of achieving Zero Net Energy (ZNE) for new construction in California. The key policy timelines include: (1) all new residential construction in California will be ZNE by 2020, and (2) all new commercial construction in California will be ZNE by 2030.

The ZNE goal generally means that new buildings must use a combination of improved efficiency and renewable energy generation to meet 100 percent of their annual energy need, as specifically defined by the CEC:

> "A ZNE Code Building is one where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single 'project' seeking development entitlements and building code permits, measured using the [CEC]'s Time Dependent Valuation (TDV) metric. A ZNE Code Building meets an Energy Use Intensity value designated in the Building Energy Efficiency Standards by building type and climate zone that reflect best practices for highly efficient buildings" (CEC 2015:41).

In addition to CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) are commonly referred to as CALGreen, and establish voluntary and mandatory standards pertaining to the planning and design of sustainable site development, energy efficiency, water conservation, material conservation, and interior air quality. CALGreen is periodically amended, and the 2016 CALGreen standards become effective on January 1, 2017.

The Building Energy Efficiency Standards are updated on approximately a three-year cycle. The 2019 standards will would achieve greater energy efficiency as compared to the 2016 standards. Residential and

non-residential buildings built later than 2019 will be required to comply with the 2019 standards, as will other future residential and non-residential buildings constructed within the timeframe of future editions of the standards.

2.2.3 Local

SCAG'S REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY

As previously discussed, SB 375 requires SCAG to incorporate an SCS into its RTP that achieves the GHG emission reduction targets set by ARB. As required by SB 375, ARB adopted year 2020 and 2035 GHG reduction targets for each metropolitan region. The SB 375 targets for the Southern California region under SCAG's jurisdiction in 2020 and 2035 are reductions in per capita GHG emissions of 8 percent and 13 percent, respectively (ARB 2014b).

Pursuant to Government Code Section 65080(b)(2)(K), an SCS does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it.

2012 Sustainable Communities Strategy

In April 2012, SCAG adopted its first-ever SCS, which is included in the *2012–2035 Regional Transportation Plan/Sustainable Communities Strategy* (2012 RTP/SCS). The goals and policies of the SCS that reduce VMT (and result in corresponding GHG emission reductions) focus on transportation and land use planning that include building infill projects, locating residents closer to where they work and play, and designing communities so there is access to high quality transit service. SCAG's 2012 SCS is expected to reduce per capita transportation emissions by 9 percent in 2020 and by 16 percent in 2035. In 2012, ARB accepted SCAG's determination that the 2012 SCS would meet the region's GHG reduction targets (ARB 2012).

2016 Sustainable Communities Strategy

In April 2016, SCAG adopted the 2016-2040 RTP/SCS: A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life (2016 RTP/SCS). SCAG's 2016 SCS is expected to reduce per capita transportation emissions by 8 percent in 2020, 18 percent in 2035, and 21 percent in 2040. In June 2016, ARB accepted SCAG's determination that the 2016 SCS would meet the region's GHG reduction targets for 2020 and 2035.

COUNTY OF LOS ANGELES GENERAL PLAN

The County Board of Supervisors adopted the Los Angeles County General Plan 2035 in October 2015. The General Plan directs future growth and development in the County's unincorporated areas and establishes goals, policies, and objectives that pertain to the entire County.

As part of the General Plan's Air Quality Element, the County adopted a Community Climate Action Plan (CCAP) to reduce GHG emissions associated with community (not municipal) activities in unincorporated Los Angeles County. The CCAP addresses emissions from building energy, land use and transportation, water consumption and waste generation, and sets forth the County's path to a sustainable future that achieves identified GHG reductions. More precisely, the CCAP includes 26 local actions that are grouped into five emissions reduction strategy areas: (1) green building and energy; (2) land use and transportation; (3) water conservation and wastewater; (4) waste reduction, reuse and recycling; and, (5) land conservation and tree planting.

COUNTY OF LOS ANGELES COMMUNITY CLIMATE ACTION PLAN

The County of Los Angeles CCAP provides that public agencies and private developers may use it to comply with project-level review requirements pursuant to CEQA, because it accords to the tiering requirements established by CEQA Guidelines Section 15183.5(b)(1). As such, the CCAP provides that project-specific

environmental documents that incorporate applicable emissions reduction strategies can rely on the GHG analysis in the Environmental Impact Report (EIR) certified for the County's General Plan (including the CCAP) to meet project-level CEQA evaluation requirements for the time period covered by the CCAP. Projects that demonstrate consistency with applicable emissions reduction strategies can be determined to have a less-than-significant impact on GHG emissions and global climate change.

The CCAP focuses on compliance with AB 32 and includes GHG reduction strategies up to the year 2020 and provides a projected inventory for 2035. The actions included in the CCAP will help Los Angeles County achieve GHG reductions consistent with statewide goals by 2020. By 2021, the County will develop an update to the CCAP for the years following 2020. Because the current CCAP does not apply to the full project buildout year (2030), for the purposes of this project, the CCAP and its associated environmental documents cannot be relied on for GHG significance determinations. The updated CCAP containing projections and reduction strategies up through the year 2035 would be intended to serve as a qualified plan that may be applied to future project implementation actions occurring after the adoption of the updated CCAP.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

The South Coast Air Quality Management District (SCAQMD) is principally responsible for comprehensive air pollution control in the South Coast Air Basin, which includes Los Angeles, Orange, and the urbanized portions of Riverside and San Bernardino counties. SCAQMD works directly with SCAG, County transportation commissions, and local governments, and cooperates actively with all federal and state government agencies to regulate air quality.

Adopted Threshold for Stationary Source Projects

In 2008, SCAQMD's Governing Board adopted an interim CEQA GHG significance threshold of 10,000 MT CO_2e per year for industrial stationary source projects for which SCAQMD is the CEQA lead agency. When adopting its threshold, the Governing Board authorized the use of offsets as mitigation (SCAQMD 2008).

Draft Threshold for All Other Project Types

For all other projects (i.e., non-stationary source projects), SCAQMD staff developed a draft, multi-tier framework to assist with the CEQA significance evaluation process. The draft framework recognized the relevance of locally adopted GHG reduction plans, and allowed for the use of such plans in the significance evaluation process. Additionally, the draft framework included the development of the following efficiency targets:

> 2020: 4.8 MT CO_2e per year per service population (defined to include residents plus workers)
> 2035: 3.0 MT CO_2e per year per service population (same as above)

If none of the prescribed performance standards are met, the draft framework recognized the use of off-site mitigation.

As of October 2016, SCAQMD's Governing Board has not adopted the draft staff proposal. Therefore, no GHG significance thresholds are approved for use in the South Coast Air Basin by the applicable regional air district (i.e., SCAQMD).

SANTA CLARITA VALLEY AREA PLAN: ONE VALLEY ONE VISION 2012

The Santa Clarita Valley Area Plan: One Valley One Vision 2012 (Area Plan) serves as a long-term guide for development in the Santa Clarita Valley (Valley) Planning Area over the next 20 years. The Area Plan ensures consistency between the General Plans of the County and the City of Santa Clarita (City) to achieve common goals. The primary GHG-related policy of the Area Plan is the requirement that the County create and adopt a Climate Action Plan; that effort is complete, as discussed above.

2.3 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

2.3.1 Greenhouse Gas Provisions in CEQA Guidelines

In 2007, SB 97 was enacted calling for the preparation and adoption of CEQA Guidelines to address environmental impacts of GHG emissions. CEQA Section 21083.05 was added by the statute and directed that guidelines be developed "for the mitigation of greenhouse gas emissions or the impacts of greenhouse gas emissions as required by this division, including, but not limited to, impacts associated with transportation or energy consumption." A series of CEQA Guidelines amendments were added in 2010 to fulfill the requirements of SB 97. Key provisions relevant to determining the significance of GHG emissions are summarized as follows.

Section 15064.4 was added as one of a set of amendments addressing GHG. The Guidelines state:

(a) "The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project…"

(b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible impacts of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

Additionally, under CEQA Guidelines Section 15126.4(c)(3)-(4), a project's GHG emissions can be reduced by "[o]ff-site measures, including offsets that are not otherwise required" and "[m]easures that sequester greenhouse gases." Therefore, the CEQA Guidelines allow projects to reduce GHG emissions by relying on voluntary market offsets that are not otherwise required as well as other offsite and sequestration measures that result in GHG reductions.

2.3.2 Threshold of Significance for the Additional Environmental Analysis

Section 15064 of the CEQA Guidelines provides the foundational guidance for determinations of significant effect on the environment. As noted in subpart (b) of Section 15064, "(t)he determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Recognizing that GHG emissions contribute to the cumulative impact condition of global climate change, Section 15064(h)(1) is also pertinent. When assessing if a significant environmental effect may occur,

Section 15064(h)(1) states that "the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable." A cumulative impact may be significant when the project's incremental effect, though individually limited, is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of other past, current, and reasonably foreseeable probable future projects. As discussed in Section 2.1, Environmental Setting, climate change is the product of incremental contributions of GHGs on a global scale; therefore, a project's cumulatively considerable GHG emissions, even if relatively small in magnitude compared to world-wide emissions, could ultimately contribute to the progression of climate change.

To define the appropriate approach to the judgment of significance in the case of this project and the Additional Environmental Analysis (AEA) prepared in response to a Supreme Court decision, CDFW has been guided and informed by principles detailed in CEQA Guidelines Sections 15064 and 15064.4 and relevant portions of Guidelines Appendix G. CDFW also recognizes the guidelines' recommendations for a lead agency to consider the project's consistency with relevant, adopted plans and the direction in CEQA Guidelines Section 15125(d) to discuss any inconsistencies with applicable regional plans, including plans for the reduction of GHG emissions. In Appendix G of the State CEQA Guidelines, two questions are provided to help assess if the project would result in a potentially significant impact on climate change. Would the project:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs?

In response to the Supreme Court's decision, the project applicant approached CDFW to propose extensive, tailored mitigation strategies to minimize GHG emissions from project land developments and then, for emissions that cannot be fully avoided, compensate through offsets, resulting in zero net GHG emissions compared to existing conditions (i.e., no net increase in GHG emissions). The project applicant has proposed the commitment to achieve zero net GHG emissions using feasible and reliable emission-reduction actions related to the land development project, the implementation of direct measures to reduce GHG emissions offsite, and the procurement of GHG offsets. The intended net outcome would be to eliminate any contribution of GHG emissions to the cumulative impact of global climate change.

In light of the project applicant's proposed commitment and modifications to the project, and in consideration of the direction from the CEQA Guidelines, the threshold of significance for the Newhall Ranch RMDP and SCP Project will be to feasibly and reliably attain the project applicant's commitment to achieve no net increase in GHG emissions. With such an outcome, the project would not increase GHG emissions, which is applicable to Section 15064.4(b)(1). Similarly for cumulative impacts, because of the commitment to achieve zero net GHG emissions, the project's incremental contribution to climate change would be eliminated, and therefore it would not be cumulatively considerable. With no increase in GHG emissions compared to existing conditions, any inconsistencies with relevant plans would be avoided. If, through the zero GHG emissions commitment, the project demonstrates that it may be implemented and operate without increasing emissions of GHGs beyond the existing conditions, the project-level and cumulative impact to global climate change would be less than significant.

In the evaluation of GHG-related impacts, CDFW has exercised its independent lead agency review and analysis, pursuant to Public Resources Code section 21082.1(c)(1). CDFW has applied its judgment and discretion, in consultation with ARB, in estimating the project's emissions, defining the zero net commitment detailed in the additional analysis, making the project-specific impact significance determination and cumulative considerable contribution determination, and including mitigation measures to achieve the project commitment.

The intent of this analysis is not to present the use of a zero GHG emissions commitment as a generally applied threshold of significance for GHG impacts. Its use herein is related directly to the facts surrounding

the project and the project applicant's proposed commitment. Achieving zero net GHG emissions is the appropriate threshold for the proposed project in this case. CDFW recognizes there are multiple pathways available under CEQA for a lead agency to assess and analyze the significance of project-specific GHG emissions. Consistent with the CEQA Guidelines principles highlighted above, determining the significance of related effects is a matter of lead agency discretion, requiring careful judgment on a project-by-project basis. Achieving zero net emissions is just one way to reach a less-than-significant conclusion; it is not the only approach; and it may not be needed or appropriate for all projects.

2.3.3 Analysis Methods

Project-related operational emissions of GHGs were estimated for the following sources: area sources (e.g., landscaping-related fuel combustion sources), energy use associated with residential and non-residential buildings, water and wastewater treatment and distribution, solid waste, and mobile sources (e.g., passenger vehicles). In addition, the one-time increase in emissions associated with construction activities and vegetation changes was quantified. The typical types of GHG emissions resulting from mixed-use developments, such as the proposed project, are CO_2, CH_4, and N_2O. GHG emissions are measured in terms of MT CO_2e, which is calculated as the product of the mass emitted of a given GHG and its GWP.

The impact analysis in the AEA first estimates GHG emissions from the project construction and operation prior to consideration of mitigation measures. The project applicant has proposed mitigation measures to reduce and compensate for GHG emissions in response to the Supreme Court's decision on the previous 2010 Final EIR. The project applicant's proposal includes the commitment that the project would achieve zero net GHG emissions through the implementation of emission-reduction measures applied to project elements and activities, direct measures to reduce GHG emissions offsite, and the procurement of compensatory GHG offsets. CDFW has independently reviewed and analyzed, in consultation with ARB, the proposed mitigation measures. This section concludes by assessing the significance of the project's GHG emissions after consideration of the proposed mitigation measures.

Short-term construction-generated and long-term operational GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 computer program (SCAQMD 2013). CalEEMod uses widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources such as the EPA AP-42 emission factors, and ARB's on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC) and the Emissions Inventory Program model (OFFROAD). EMFAC is an emission factor model used to calculate emissions rates from on-road vehicles (e.g., passenger vehicles). The emission factors used by CalEEMod are based on the ARB EMFAC2011 program. OFFROAD is an emission factor model used to calculate emission rates from off–road mobile sources (e.g., construction equipment, agricultural equipment). The off-road diesel emission factors used by CalEEMod are based on the ARB OFFROAD2011 program.

The 2013.2.2 version of CalEEMod does not incorporate the updated version of EMFAC (2014) which includes various updates, notably the incorporation of EPA and ARB regulations and standards. The updates were in response to regulations enacted through California's ACC Program and NHTSA Phase 1 standards. Therefore, EMFAC2014 information was incorporated into the analysis in lieu of CalEEMod's default use of EMFAC2011 information. Notably, EMFAC2014 (unlike EMFAC2011) excludes GHG emission reductions from LCFS.

In addition, CalEEMod contains default values and methodologies consistent with existing regulations for each region. Appropriate statewide default values can be used if regional default values are not defined. Default factors for Los Angeles County area (within the SCAQMD jurisdiction) were used for the GHG emission inventory, unless otherwise noted in the methodology descriptions below.

CalEEMod uses GWPs from the IPCC Second Assessment Report, which is 310 for N_2O and 21 for CH_4. Therefore, the GWPs in the IPCC Fourth Assessment Report of 298 for N_2O and 25 for CH_4 were manually

incorporated to CalEEMod output as the Fourth Assessment Report to be consistent with current GWPs used by ARB in its current emission inventories.

Modeling assumptions are included in the Technical Report contained in AEA Appendix 1. Where appropriate, directions to Technical Report sections, tables, and appendices within AEA Appendix 1 that relate to specific modeling details are provided to support the GHG analysis.

CONSTRUCTION EMISSIONS

Model assumptions for construction-related emissions were based on project-specific information (i.e., number and type of units, construction phasing based on site location, start date of construction, area to be graded, area to be paved, and year of operation); and default values in CalEEMod that are based on the project's location and land use types. The project's construction schedule consists of six stages, with construction-related activities commencing in March 2018 and concluding in December 2030. This schedule conservatively assumes that construction may continue to the end of 2030 when the project reaches full operation. While some construction phases are conservatively identified to conclude in the second half of the 2030 calendar year, the project's absorption schedule anticipates that the project would be fully constructed and occupied during the 2030 calendar year.

For each of the stages, the major construction phases included are grading, trenching or improvements, paving, building construction, and architectural coating. GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting vehicles. Construction-related emissions were estimated using CalEEMod Version 2013.2.2. The construction schedule, off-road equipment lists and equipment specifications used in CalEEMod are project specific estimates, and consistent with the total level of construction equipment activity analyzed in the *Final Joint Environmental Impact Statement/EIR (EIS/EIR) for the RMDP and SCP Project* GHG analysis.

Adjustments were made to CalEEMod's default parameters for the number of worker and vendor trips. CalEEMod default assumptions result in an over-estimation of the number of vendor and worker trips during the building construction and architectural coating phases due to the model's assumption that all buildings are constructed simultaneously during every year of construction activity. The project proposes to phase development such that construction-related activities would occur on various portions of the total development area from year-to-year. Therefore, an adjustment factor was applied to correct CalEEMod's number of vendor and worker trips based on the estimated number of residential dwelling units and non-residential square footage being built and painted in each calendar year. Additional details on construction-related inputs to CalEEMod are shown in Technical Report Tables 2.3-1 through 2.3-5 and Technical Report Appendix B, contained in AEA Appendix 1.

AREA SOURCES

Area sources in CalEEMod are direct sources of GHG emissions. The area source GHG emissions included in this analysis result from landscaping-related fuel combustion sources, such as lawn mowers. GHG emissions due to natural gas combustion in buildings, including fireplaces, are excluded from this section as they are included in the emissions associated with building energy use. Additional details on area source inputs to CalEEMod are shown in Technical Report Table 2-11 and Technical Report Appendix B, contained in AEA Appendix 1.

ENERGY USE

Natural gas combustion used for space heating, water heating, and cooking is a direct source of GHG emissions from the project. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions.

Residential building energy use data for the project was generated by ConSol using the CEC-approved CBECC-Res 2016 software. The total residential energy use rates were input into CalEEMod. CalEEMod default values were used in combination with building energy use data prepared by ConSol using CEC-approved building energy modeling software (EnergyPro 6.8 and 7.1). The project was assumed to comply with the 2016 Title 24 efficiency standards; however, CalEEMod provides default values based on the 2008 Title 24 Standards. Therefore, the 2016 Title 24 energy efficiency improvement from 2008 Title 24 were applied to the relevant default energy intensity factors to estimate energy demand for the project. More detailed assumptions regarding residential building energy use is contained in Technical Report Tables 4-1a through 4-1d and Technical Report Appendix C, contained in AEA Appendix 1.

The project's non-residential building energy use data was generated using default values in CalEEMod in combination with building energy use data prepared by ConSol using CEC-approved building energy modeling software (EnergyPro 6.8 and 7.1). Because CalEEMod is based on the 2008 Title 24 Standards, percentage reductions were applied to CalEEMod default energy intensity factors to estimate the energy savings resulting from implementation of the 2016 Title 24 Standards. Additional assumptions about non-residential building energy are shown in Technical Report Tables 4-2a through 4-2d and Technical Report Appendix C of AEA Appendix 1.

The swimming pools at the project's private recreation centers were assumed to use electricity for filters and pumps, and natural gas for water heating. See Technical Report Table 2-14a of AEA Appendix 1 for more detail.

Further, the CalEEMod default CO_2 intensity factor was modified to reflect compliance with 50 percent RPS for 2030 based on SCE Power/Utility Protocol (PUP) reports. CalEEMod intensity factors for CH_4 and N_2O were retained to provide a more conservative estimate for these emissions. Additional detail is contained in Technical Report Appendix B contained in AEA Appendix 1.

MOBILE SOURCES

Mobile Sources GHG emissions associated with on-road mobile sources are generated from residents, workers, customers, and delivery vehicles visiting the land uses developed as part of the project. Mobile-source emissions were estimated using CalEEMod, with adjustments based on EMFAC2014 emission factors, and estimates of project-generated vehicle trips from the traffic study conducted for the project by Stantec, which was derived using the Santa Clarita Valley Consolidated Traffic Model (SCVCTM).

SCVCTM takes into account five standardized trip types: home-based work trip, home-based shopping trips, home-based "other" (i.e., non-work, non-shopping) trips, other-based work trips, and other-based other trips. Trip generation numbers were adjusted to reflect the characteristics of a planned community (i.e., mixed-use development) which have higher internal trip capture rates than single-use developments. VMT data, which is generated by multiplying trip length with total number of daily trips, was adjusted by applying an internalization factor appropriate to each trip purpose to more appropriately reflect the anticipated vehicle travel patterns in the proposed project. Detailed assumptions regarding SCVCTM are located in Technical Report Section 2.3.5, Mobile Sources, and Technical Report Appendix D contained in AEA Appendix 1.

CalEEMod, in combination with VMT estimates provided by SCVCTM, was used to calculate mobile source GHG emissions. CalEEMod provides the option to assign different trip lengths for different trip types; however, to calculate a more conservative estimate and ensure that the total annual VMT was consistent with estimates from SCVCTM, a consistent trip length was applied for all trip types. Further, CalEEMod's default approach is to specify a certain percentage of vehicle trips as pass-by or diverted trips, and assigns shorter trip length to these trips. To provide a more accurate and conservative VMT estimate, this default was overridden by designating all trips as primary trips rather than diverted or pass-by trips.

Additionally, to more accurately demonstrate the benefits from adopted regulatory programs such as Pavley and ACC, as discussed in Section 2.2, Regulatory Setting, EMFAC 2014, recently released by ARB, was incorporated into the analysis. Further, EMFAC 2014, unlike EMFAC 2011, excludes GHG emissions

reductions from LCFS and results in more conservative estimates of mobile source GHG emissions. EPA/NHTSA's Phase 1 and Phase 2 advanced fuel economy and GHG standards for medium- and heavy-duty trucks were also incorporated. Additional details on the project's VMT calculations, internal trip capture adjustments, and mobile source emission factors are provided in Technical Report Tables 2-17a through 2-18b and Technical Report Appendix D, all contained in AEA Appendix 1.

WATER CONSUMPTION

Indirect GHG emissions also result from the production of electricity to convey, treat, and distribute the project's water and wastewater. GHG emissions from water consumption and wastewater treatment were estimated based on the volume of water that would be required by the project. The project's demand, recycled water usage, and wastewater generation values were based on Alternative D2 of the *Final Joint EIS/EIR for the RMDP and SCP Project*, and scaled by the change in land use square footage and number of dwelling units between the project and Alternative D2. The scaling factors and subsequent water use quantities are shown in Technical Report Tables 2-15a through 2-15e in AEA Appendix 1.

The project's estimated water usage reflects a demand reduction for indoor potable water that is based on compliance with applicable regulatory water conservation and recycled water requirements. Specifically, the project would comply with the CALGreen Standards, which require a 20 percent reduction in indoor potable water use through the use of water saving fixtures and/or flow restrictors. Because the CALGreen Standards were adopted in 2010, after the development of the water usage estimates presented in the *Final Joint EIS/EIR for the RMDP and SCP Project*, the indoor water usage was reduced to reflect project compliance with the CALGreen Standards.

The project's estimated water usage also reflects that recycled water would be used to satisfy a portion of its demand for the outdoor, irrigation-related water demand, consistent with the mandate by the State Water Resources Control Board's (SWRCB's) recycled water policy (SWRCB 2013).

The CALGreen Standards, as well as the County of Los Angeles's Green Building Standards Code (Municipal Code Title 31) and previously adopted Newhall Ranch Specific Plan (NRSP) mitigation measures, and the local water purveyor (Valencia Water Company), would also require the incorporation of features to reduce the project's outdoor water demand. The analysis conservatively does not reduce the project's outdoor water usage to reflect these requirements.

For indirect emissions associated with the supply, treatment, and distribution of the project's water, CalEEMod default assumptions were used for the project's Valencia Commerce Center and Entrada planning areas, which would rely upon a blend of locally-sourced and State Water Project water. The default assumptions represent the average embodied energy for the supply, treatment, and distribution of water for Southern California, which are determined by a study commissioned by the CEC (CEC 2006). Because the NRSP area would exclusively use locally-sourced groundwater, different factors were used to account for the energy embodied in the NRSP's water use. Detailed water use estimates are provided in Technical Report Appendix B contained in AEA Appendix 1.

The CalEEMod default assumptions conservatively estimate the GHG emissions associated with the distribution of the wastewater generated by the project's NRSP area. The Newhall Ranch Water Reclamation Plant (WRP) would be located within the NRSP area, and not outside the project as assumed by the default electricity intensity factor for wastewater treatment.

The direct and indirect emissions associated with the Newhall Ranch WRP's wastewater treatment processes are captured through the wastewater emissions estimates in CalEEMod for each of the project land uses in the NRSP that would send wastewater to the WRP; because the WRP is designed with the capacity to treat 6.8 million gallons per day (mgd) of wastewater, emissions were estimated based on the maximum capacity to provide a conservative estimate. See Technical Report Tables 2-15a through 2-15d in AEA Appendix 1 for more detailed assumptions.

SOLID WASTE

Indirect GHG emissions associated with solid waste generated by the proposed land uses were estimated using the applicable module in CalEEMod and solid waste generation rate based on the City of Santa Clarita 2012 actual disposal rates. The analysis assumes that additional waste would be diverted from landfills by a variety of means, such as reducing the amount of waste generated, and increasing the amount of waste recycled, and/or composted to meet the statewide goal of 75 percent waste diversion (AB 341, Chapter 476, Statutes of 2011). Various plans and regulations applicable to the project support achieving the statewide diversion goal, including: (1) SW- 1: Waste Diversion Goal of the County's Community Climate Action Plan, which calls for compliance with all state mandates associated with diverting at least 75 percent of waste from landfill disposal by 2020; (2) the County's Green Building Standards Code (Municipal Code Title 31), which includes a number of sustainability requirements that apply to waste diversion; and, (3) AB 1826, which requires applicable commercial businesses to separate food scraps and yard trimmings, and arrange for recycling services for that organic waste. Various design elements of the project, such as the provision and location of recycling receptacles would also further the achievement of AB 341 goals. Additional detail regarding solid waste-related GHGs are shown in Technical Report Table 2-16 contained in AEA Appendix 1.

VEGETATION CHANGE

The loss in sequestered carbon was also estimated in CalEEMod using the vegetation module. Permanent vegetation changes occur as a result of land use development constitute a one-time change in the carbon sequestration capacity of a project site. Thus, total one-time GHG emissions from the loss in carbon sequestration were estimated and then amortized over the operational life of the project (assumed to be 30 years for this analysis). This approach is consistent with SCAQMD's recommendations on the use of the vegetation module in CalEEMod (SCAQMD 2013). Land use change was based on CDFW's Draft Joint EIS/EIR for the RMDP and SCP Project (April 2009; SCH No. 2000011025), Volume XVI – Appendix 8.0 [ENVIRON International Corporation, Climate Change Technical Report (February 2009)]. Accounting for the loss in sequestered carbon in this way allows for the evaluation of whether ongoing operation of the proposed land uses would be efficient enough to "recoup" these one-time emissions. See Technical Report Section 2.2.2 and Technical Report Tables 2-10a and 2-10b in AEA Appendix 1 for more detailed assumptions.

2.3.4 Impact Analysis

Impact 2-1: Project-Generated GHG Emissions

The project is estimated to generate annualized construction emissions of 6,437 MT CO_2e amortized over 30 years (193,119 MT CO_2e total), net annualized vegetation change emissions of 1,335 MT CO_2e amortized over 30 years (40,059 MT CO_2e total based on net change in carbon sequestration/land use changes), and 518,330 MT CO_2e operations-related emissions at project buildout in 2030. Before consideration of mitigation measures proposed by the project applicant, total project emissions would be 526,103 MT CO_2e/year in 2030. This level of GHG emissions has the potential to result in a considerable contribution to cumulative emissions related to global climate change, and would be **potentially significant without the implementation of further mitigation**. The project applicant has proposed as mitigation the commitment for the project to achieve zero net GHG emissions (i.e., no net increase above existing conditions) through a combination of feasible and reliable emission-reduction actions, direct measures to reduce GHG emissions offsite, and the procurement of compensatory GHG offsets. With the implementation of the proposed mitigation measures and resulting achievement of zero net GHG emissions, the project would not make any contribution to cumulative GHG emissions, so the **GHG impact would be less than significant with mitigation**.

Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the project area, and off-road construction equipment (e.g., dozers, loaders, excavators) operating onsite. Construction of the land uses proposed under the project would occur

over six stages with mass grading and utilities construction to begin in 2018. The construction emissions that would occur within each stage is summarized in Table 2.3-1.

Table 2.3-1 Summary of Greenhouse Gas Emissions by Construction Stage[1]

Stage	Year	Emissions (MT CO_2e/year)		
		Off-Road[2]	On-Road[3]	Total
1	2018	3,487	1,045	4,532
	2019	4,465	801	5,266
	2020	4,320	692	5,013
	2021	2,827	1,089	3,916
	2022	272	699	970
	2023	272	690	961
	2024	272	686	958
	2025	272	680	952
	2026	272	674	946
	2027	272	669	941
	2028	284	694	978
	Total	**17,014**	**8,418**	**25,432**
2	2018	2,909	311	3,220
	2019	4,564	670	5234
	2020	396	249	645
	2021	285	382	667
	2022	285	377	662
	2023	285	372	657
	2024	286	372	659
	Total	**9,010**	**2,735**	**11,745**
3	2020	10,233	796	11,029
	2021	8,812	949	9,761
	2022	2,751	1,593	4,345
	2023	3,290	1,600	4,890
	2024	5,268	1,924	7,192
	2025	7,722	2,116	9,837
	2026	737	1,455	2,192
	2027	737	1,444	2,181
	2028	734	1,429	2,163
	2029	737	1,426	2,163
	2030	816	1,419	2,235
	Total	**41,835**	**16,152**	**57,987**
4	2023	15,236	907	16,143
	2024	17,162	1,494	18,656
	2025	17,004	1,480	18,484
	2026	2,200	2,448	4,648
	2027	1,234	2,382	3,616
	2028	1,145	2,355	3,500
	2029	1,149	2,351	3,501
	2030	1,279	2,341	3,620
	Total	**56,410**	**15,757**	**72,166**

Table 2.3-1 Summary of Greenhouse Gas Emissions by Construction Stage[1]

Stage	Year	Emissions (MT CO_2e/year)		
		Off-Road[2]	On-Road[3]	Total
5	2018	3,587	676	4,263
	2019	2,101	276	2,378
	2020	656	266	922
	2021	473	422	894
	2022	384	411	795
	2023	384	406	789
	2024	387	407	793
	2025	385	401	786
	2026	385	398	783
	Total	**8,741**	**3,662**	**12,403**
6	2020	4,763	727	5,491
	2021	1,535	596	2,131
	2022	252	394	646
	2023	252	390	642
	2024	252	388	640
	2025	252	385	637
	2026	252	382	634
	2027	252	380	632
	2028	252	378	630
	2029	252	376	628
	2030	289	385	674
	Total	**8,604**	**4,782**	**13,386**
Grand Total				**193,119[4]**
30-Year Amortized				**6,437**

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; EPA=Environmental Protection Agency0

[1] Sources of GHG emissions occur during construction activities such as grading, trenching, paving, building construction, and application of architectural coatings.

[2] This analysis assumes that the off-road, diesel-powered construction equipment greater than 50 horsepower used to grade the project site shall meet the EPA's Tier 3 standards at a minimum; construction equipment shall achieve the Tier 4 standards, where feasible.

[3] Emissions associated with worker and vendor trips for building construction and architectural coating were scaled by the adjustment factor to adjust for double-counting associated with analyzing phased construction in CalEEMod.

[4] Summarized emissions by year are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See Technical Report Tables 2-3 through 2-9 and Technical Report Appendix B, contained in AEA Appendix 1 for detailed calculations.

The project would generate a total of 193,119 MT CO_2e over the duration of construction activities (2018-2030). Total construction emissions were amortized over the project's 30-year life, consistent with guidance from SCAQMD. Amortized construction emissions are also shown in Table 2.3.3.

The project would also include changes in vegetation types, which, as discussed under the heading, Analysis Methods, alters the carbon sequestration potential of a project site. Acres of vegetation change and type by area, as well as the corresponding emissions of CO_2 are provided in Table 2.3-2 below.

Table 2.3-2 Vegetation Change Evaluation

Area	Type of Vegetation Change	Land Use Change[1]		
		Existing (acres)	Final (acres)	Emissions[2] (MT CO_2e/year)
ES	Cropland	44.0	0	273
	Grassland	5.8	0	25
	Trees	1.7	0	189
	Scrub	149.3	0	2,135
	Total Vegetation Change	**200.8**	**0**	**2,621**
NRSP	Cropland	2,036.3	138	11,769
	Wetlands	8.8	0	0
	Trees[3]	107.0	0	11,877
	Grassland	950.5	0	4,097
	Trees	82.6	0	9,169
	Scrub	1,903.4	0	27,219
	Total Vegetation Change	**5,088.6**	**138**	**64,130**
VCC	Cropland	86.0	0	533
	Grassland	63.3	0	273
	Trees	18.5	0	2,054
	Scrub	37.6	0	538
	Wetland	0.6	0	0
	Total Vegetation Change	**206.0**	**0**	**3,397**
Total		**5,495.4**	**138**	**70,149[5]**
CO_2e Sequestered from Net New Trees[4]				**-30,090**
Total CO_2e Emissions Released				**40,059**
30-Year Amortized				**1,335**

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; CDFW=California Department of Fish and Wildlife; EIS/EIR=Environmental Impact Statement/Environmental Impact Report; RMDP=Resource Management Development Plan; SCP=Spineflower Conservation Plan; ES=Entrada South; NRSP=Newhall Ranch Specific Plan; VCC=Valencia Commerce Center

[1] Land use change was based on the CDFW Draft Joint EIS/EIR for the RMDP and SCP Project, Table 4-2-B.

[2] Emissions were calculated using CalEEMod 2013.2.2 values.

[3] Two sets of tree land use changes were modeled based on the land designation of "Broad Leaf Upland" and "Riparian and Bottomland" in the table cited above (Table 4-2-B).

[4] Total CO_2e sequestered over 20-year active growth period of new trees is reported as recommended by the Intergovernmental Panel on Climate Change. The negative value indicates CO_2 emissions sequestered, as opposed to emissions released. Total number of new trees is 42,500.

[5] Summarized emissions by area are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See Technical Report Tables 2-10a and 2-10b in AEA Appendix 1 for detailed calculations.

The project would result in a total of 40,059 MT CO_2e from vegetation change associated with project implementation. These emissions reflect emissions of CO_2e from loss in vegetation type combined with sequestration of CO_2e from the planting of new trees. Total emissions are amortized over the project's 30-year life, consistent with guidance from SCAQMD. Amortized vegetation change emissions are also shown in Table 2.3-3.

Operation of the project would result in GHG emissions associated with motor vehicle trips to and from the project area; combustion of natural gas for space and water heating; consumption of electricity and water; conveyance, treatment, and discharge of wastewater; transport and disposal of solid waste; and use of equipment for landscaping. The removal of trees and vegetation would also result in the loss of sequestered carbon. Table 2.3-3 summarizes all the direct and indirect sources of GHG emissions associated with the project upon full buildout in 2030, along with existing emissions from the project site. The emissions estimates are based on the application of existing regulations pertaining to vehicle emissions, building standards, and electricity generation. See heading, Analysis Methods, above for further information.

As shown in Table 2.3-3, upon full buildout, GHG emissions associated with construction and operation of the proposed project would be 526,103 MT CO_2e/per year in 2030. This level of GHG emissions has the potential to result in a considerable contribution to cumulative emissions related to global climate change, and would be potentially significant without the implementation of further mitigation.

Table 2.3-3 Summary of Annual Greenhouse Gas Emissions Comparing Existing Emissions with Unmitigated Project Emissions at Full Buildout (2030)

Emissions Activity	Emissions (MT CO_2e/year)	
	Existing[1]	Unmitigated
Mobile Sources	152	403,814
Electricity	–	39,393
Natural Gas	–	43,386
Area Sources[1]	7,883	367
Water Consumption and Wastewater Treatment	2,987	8,190
Solid Waste Generation	–	23,179
Vegetation Removal	–	1,335
Construction	–	6,437
Total Annual Emissions	**11,021**	**526,103**[2]

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; N_2O=nitrous oxide

[1] Existing emissions are categorized as follows:

Area Sources: methane emission associated with oil wells, energy use associated with oil wells, N_2O emissions associated with fertilizer use.

Water Consumption: energy use associated with water.

Mobile Sources: emissions associated with diesel fuel usage.

[2] Summarized emissions per sector are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

The project applicant has proposed a commitment to CDFW to reach zero net emissions, in response to the California Supreme Court ruling in November 2015. Without incorporation of emission-reduction measures, the project would not be able to meet this commitment. Because the project's emissions would be a potentially considerable contribution to cumulative emissions influencing global climate change and in light of the project applicant's zero net GHG emissions commitment, the project applicant has proposed mitigation measures that would result in no net increase in GHG emissions above existing conditions. The mitigation measures presented below have been independently reviewed and analyzed by CDFW, in consultation with ARB, and modified, where needed, from the project applicant's original proposal. With the implementation of the following 13 mitigation measures, the project would feasibly and reliably achieve the zero net emissions commitment.

Consistent with SCAQMD recommendations, the mitigation considered the following geographic priorities: (1) project design feature/on-site reduction measures; (2) off-site within neighborhood; (3) off-site within district; (4) off-site within state; and (5) off-site out of state (SCAQMD 2008).

Mitigation Measure 2-1: Residential Zero Net Energy

Prior to the issuance of residential building permits, the project applicant or its designee shall submit a Zero Net Energy Confirmation Report (ZNE Report) prepared by a qualified building energy efficiency and design consultant to Los Angeles County for review and approval. The ZNE Report shall demonstrate that the residential development within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations has been designed and shall be constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency, renewable energy generation or greenhouse gas emissions savings.

A ZNE Report may, but is not required to:

- Evaluate multiple buildings and/or land use types. For example, a ZNE Report may cover all of the residential and commercial buildings within a neighborhood/community, or a subset thereof.
- Rely upon aggregated or community-based strategies to support its determination that the subject buildings are designed to achieve ZNE. For example, shortfalls in renewable energy generation for one or more buildings may be offset with excess renewable generation from one or more other buildings, or off-site renewable energy generation. As such, a ZNE Report could determine a building is designed to achieve ZNE based on aggregated or community-based strategies even if the building on its own may not be designed to achieve ZNE.
- Make reasonable assumptions about the estimated electricity and natural gas loads and energy efficiencies of the subject buildings.

Project-related emissions of GHGs from the residential energy sector (i.e., electricity and natural gas) would be substantially reduced through implementation of Mitigation Measure 2-1. Through the incorporation of zero-energy technology into new residential development, as prescribed by a qualified energy efficiency and design consultant, fossil fuel-related sources of GHGs associated with energy use would not occur from project-related activities.

Mitigation Measure 2-1 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-1 prior to approving or issuing residential building permits. Issuance of residential buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-1 as specified.

As shown below in Table 2.3-4, implementation of Mitigation Measure 2-1 would reduce operations-related GHG emissions by 30,659 MT CO_2e/year from residential electricity and natural gas use. Details on this measure, including estimated reductions, supporting data and implementation mechanisms are provided in Technical Report Tables ES-3 and 4-1a through 4-1d and Technical Report Appendix C, all contained in AEA Appendix 1

Mitigation Measure 2-2: Non-Residential Zero Net Energy

Prior to the issuance of building permits for commercial development and private recreation centers, and prior to the commencement of construction for the public facilities, respectively, the project applicant or its designee shall submit a Zero Net Energy Confirmation Report (ZNE Report) prepared by a qualified building energy efficiency and design consultant to Los Angeles County for review and approval. The ZNE Report shall demonstrate that the commercial development, private recreation centers, and public facilities within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations have

been designed and shall be constructed to achieve ZNE, as defined by CEC in its 2015 Integrated Energy Policy Report, or otherwise achieve an equivalent level of energy efficiency, renewable energy generation or GHG gas emissions savings.

("Commercial development" includes retail, light industrial, office, hotel, and mixed-use buildings. "Public facilities" are fire stations, libraries, and elementary, middle/junior high and high schools.)

A ZNE Report may, but is not required to:

- Evaluate multiple buildings and/or land use types. For example, a ZNE Report may cover all of the residential and non-residential buildings within a neighborhood/community, or a subset thereof.
- Rely upon aggregated or community-based strategies to support its determination that the subject buildings are designed to achieve ZNE. For example, short falls in renewable energy generation for one or more buildings may be offset with excess renewable generation from one or more other buildings, or off-site renewable energy generation. As such, a ZNE Report could determine a building is designed to achieve ZNE based on aggregated or community-based strategies even if the building on its own may not be designed to achieve ZNE.
- Make reasonable assumptions about the estimated electricity and natural gas loads and energy efficiencies of the subject buildings.

Project-related emissions of GHGs from the non-residential energy sector (i.e., electricity and natural gas) would be substantially reduced through implementation of Mitigation Measure 2-2. Through incorporation of zero-energy technology into all non-residential development associated with the project, as prescribed by a qualified energy efficiency and design consultant, fossil fuel-related sources of GHGs associated with energy use would not occur from project-related activities.

Mitigation Measure 2-2 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-2 prior to approving or issuing non-residential building permits and prior to commencement of construction for public facilities. Issuance of non-residential building permits and/or commencement of construction shall be contingent upon the project applicant or its designee providing adequate evidence that Mitigation Measure 2-2 has been implemented as specified.

As shown below in Table 2.3-4, implementation of Mitigation Measure 2-2 would reduce operations-related GHG emissions by 24,512 MT CO_2e/year from non-residential electricity and natural gas use. Details on this measure, including estimated reductions, supporting data and implementation mechanisms are provided in Technical Report Tables ES-3 and 4-2a through 4-2d and Technical Report Appendix C, all contained in AEA Appendix 1.

Mitigation Measure 2-3: Swimming Pool Heating

Prior to the issuance of private recreation center building permits, the project applicant or its designee shall submit swimming pool heating design plans to Los Angeles County for review and approval. The design plans shall demonstrate that all swimming pools located at private recreation centers on the RMDP/SCP project site have been designed and shall be constructed to use solar water heating or other technology with an equivalent level of energy efficiency.

Project-related emissions of GHGs from the energy sector (specifically natural gas) associated with heating swimming pools would be eliminated through incorporation of low-emission heating design for pools constructed as a result of project implementation. Swimming pools shall be designed and constructed to use solar water heating or other technology with an equivalent level of energy efficiency; therefore, no combustion of natural gas would occur during heating and operation of the swimming pools.

Mitigation Measure 2-3 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-3 prior to approving or issuing private recreation center building permits. Issuance of private recreation center building permits will contingent upon the project applicant or its designee providing adequate evidence that Mitigation Measure 2-3 has been implemented as specified.

As shown below in Table 2.3-4, implementation of Mitigation Measure 2-3 would reduce operations-related GHG emissions by 22,356 MT CO_2e/year from natural gas use. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 2-14a, contained in AEA Appendix 1.

Mitigation Measure 2-4: Residential Electric Vehicle Chargers and Vehicle Subsidy

Prior to the issuance of residential building permits, the project applicant or its designee shall submit building design plans, to Los Angeles County for review and approval, which demonstrate that each residence within the RMDP/SCP project site subject to application of Title 24, Part 6, of the California Code of Regulations shall be equipped with a minimum of one single-port electric vehicle (EV) charging station. Each charging station shall achieve a similar or better functionality as a Level 2 charging station.

Additionally, prior to the issuance of the first building permit for the RMDP/SCP project site, the project applicant or its designee shall establish and fund a dedicated account for the provision of subsidies for the purchase of ZEVs, as defined by ARB. The project applicant or its designee shall provide proof of the account's establishment and funding to Los Angeles County.

The dedicated account shall be incrementally funded, for each village-level project, in an amount that equals the provision of a $1,000 subsidy per residence – on a first-come, first-served basis – for 50 percent of the village's total residences subject to application of Title 24, Part 6, of the California Code of Regulations.

Project-related emissions of GHGs from the transportation sector would be substantially reduced through incorporation of EV charging stations. Use of ZEVs results in a reduction of GHG emissions from fossil fuel-combusting engines. Further, the electricity supplied to EV charging stations may originate from renewable resources provided by public utilities, as specified through RPS, or on-site sources of renewable energy. As discussed above in Section 2.2, Regulatory Setting, deployment of SB 350 would require public utilities to achieve a 50 percent renewable portfolio by 2030, the year of project buildout.

Mitigation Measure 2-4 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-4 prior to approving or issuing residential building permits. Issuance of residential buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-4 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-4 would reduce operations-related GHG emissions by 53,735 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-3, contained in AEA Appendix 1.

Mitigation Measure 2-5: Commercial Development Area Electric Vehicle Chargers

Prior to the issuance of commercial building permits, the project applicant or its designee shall submit building design plans, to Los Angeles County, which demonstrate that the parking areas for commercial buildings on the RMDP/SCP project site shall be equipped with EV charging stations that provide charging opportunities to 7.5 percent of the total number of required parking spaces. ("Commercial buildings" include retail, light industrial, office, hotel, and mixed-use buildings.)

The EV charging stations shall achieve a similar or better functionality as a Level 2 charging station. In the event that the installed charging stations use more superior functionality/technology than Level 2 charging

stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by EV charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour. For purposes of this equivalency demonstration, Level 2 charging stations shall be assumed to provide charging capabilities of 25 range miles per hour.

Project-related emissions of GHGs from the transportation sector would be substantially reduced through incorporation of EV charging stations. Use of ZEVs results in a reduction of GHG emissions from fossil fuel-combusting engines. Further, the electricity supplied to EV charging stations may originate from renewable resources provided by public utilities, as specified through RPS, or on-site sources of renewable energy. As discussed above in Section 2.2, Regulatory Setting, deployment of SB 350 would require public utilities to achieve a 50 percent renewable portfolio by 2030, the year of project buildout.

Mitigation Measure 2-5 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before construction begins. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-5 prior to approving or issuing commercial building permits. Issuance of commercial buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-5 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-5 would reduce operations-related GHG emissions by 39,109 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-4, contained in AEA Appendix 1.

Mitigation Measure 2-6: Transportation Demand Management Plan

The project applicant-submitted Newhall Ranch Transportation Demand Management Plan (TDM Plan), located in Technical Report Appendix E contained in AEA Appendix 1, shall be implemented to reduce VMT resulting from project build out with oversight from Los Angeles County. The TDM Plan is designed to influence the transportation choices of residents, students, employees, and visitors, and serves to enhance the use of alternative transportation modes both on and off the project site through the provision of incentives and subsidies, expanded transit opportunities, bikeshare and carshare programs, technology-based programs, and other innovative means. Implementation of relevant elements of the TDM Plan will be included as a condition of approval by Los Angeles County when approving tentative subdivision maps for land developments that are part of the project.

Accordingly, the TDM Plan identifies key implementation actions that are critical to the effectiveness of the VMT-reducing strategies, as well as timeline and phasing requirements, monitoring standards, and performance metrics and targets tailored to each of the strategies.

In accordance with the TDM Plan, a non-profit Transportation Management Organization (TMO) or equivalent management entity shall be established to provide the services required, as applicable.

Implementation of the TDM plan would reduce project-related emissions of GHGs from the transportation sector through incorporation of measures and strategies designed to influence behavior and increase the efficiency of transportation modes. Implementation of the TDM strategy will result in increased rates of alternative modes of transportation, such as walking, bicycling, and public transit use, with a subsequent decrease in single-occupancy vehicle dependency through vanpooling, car-sharing, and ride-matching programs, which will reduce transportation-related GHG emissions on a community-wide scale. Incorporation of measures to improve the efficiency of transportation systems will lower rates of emissions associated with idling and braking. Pursuant to SB 375, TDM strategies have been developed by MPOs and incorporated into RTP/SCSs. These plans are reviewed by ARB, which has concluded that TDM produces a notable reduction in GHG emissions from automobiles (ARB 2016b).

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-6 would reduce operations-related GHG emissions by 60,179 MT CO_2e/year from the transportation sector. Details on this measure, including

estimated reductions, supporting data and implementation mechanisms, along with components of the project applicant-submitted TDM plan are provided in Technical Report Tables ES-3 and 4-5 and Technical Report Appendix E, all contained in AEA Appendix 1.

Mitigation Measure 2-7: Traffic Signal Synchronization

Prior to the issuance of traffic signal permits, the project applicant or its designee shall work with Los Angeles County and the California Department of Transportation (Caltrans), as applicable, to facilitate traffic signal coordination along:

- State Route 126 from the Los Angeles County line to the Interstate 5 north-bound ramps;
- Chiquito Canyon Road, Long Canyon Road, and Valencia Boulevard within the RMDP/SCP project site;
- Magic Mountain Parkway from Long Canyon Road to the Interstate 5 north-bound ramps; and
- Commerce Center Drive from Franklin Parkway to Magic Mountain Parkway.

To effectuate the signal synchronization and specifically the operational and timing adjustments needed at affected traffic signals, the project applicant or its designee shall submit traffic signal plans for review and approval, and/or pay needed fees as determined by Los Angeles County or Caltrans, as applicable.

A majority of the signals that will be synchronized will be new signals constructed/installed by the project. Thus, for these signals, the project will provide the necessary equipment at the signal controller cabinet, as well as within the new roadways themselves, to enable and facilitate synchronization. The project is responsible for paying 100 percent of the applicable fee amount for the signal synchronization work, with assurance that the necessary funding will be available to fully implement this measure.

The improved synchronization of the aforementioned intersections will improve vehicle efficiency, thus decreasing transportation-related emissions of GHGs associated with project implementation. Emissions from inefficient travel (e.g., idling) shall be mitigated through signal synchronization and improved vehicle movement.

Mitigation Measure 2-7 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of traffic signal permits. Los Angeles County and Caltrans shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-7 prior to issuing traffic signal permits. Issuance of traffic signal permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-7 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-7 would reduce operations-related GHG emissions by 8,214 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-6 and Technical Report Appendix I, all contained in AEA Appendix 1.

Mitigation Measure 2-8: Electric School Bus Program

Consistent with the parameters of the Newhall Ranch TDM Plan, the project applicant or its designee shall provide Los Angeles County with proof that funding has been provided for the purchase, operation and maintenance of electric school buses in furtherance of the school bus program identified in the project's TDM Plan. The proof of funding shall be demonstrated incrementally as the school bus program is paced to village-level occupancy and student enrollment levels.

Use of electric school buses would mitigate transportation-related emissions of GHGs by reducing the use of GHG-emitting fossil fuels during operation of school buses. Proof of funding shall be demonstrated incrementally as the school bus program is paced to village-level occupancy and student enrollment levels.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-8 would reduce operations-related GHG emissions by 157 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-7 in AEA Appendix 1.

Mitigation Measure 2-9: Electric Transit Bus Program

Prior to the issuance of the first 2,000th residential building permit within the RMDP/SCP project site and every 2,000th residential building permit thereafter, the project applicant or its designee shall provide Los Angeles County with proof that it has provided a subsidy of $100,000 per bus for the replacement of up to 10 diesel or compressed natural gas transit buses with electric buses to the identified transit provider(s).

Use of electric transit buses would mitigate transportation-related emissions of GHGs by reducing the use of GHG-emitting fossil fuels (i.e., diesel fuel and natural gas) during operation of transit buses.

Mitigation Measure 2-9 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure before an incremental number of residential building permits are issued. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-9 prior to issuing building permits. Issuance of buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-9 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-9 would reduce operations-related GHG emissions by 619 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-8 in AEA Appendix 1.

Mitigation Measure 2-10: Offsetting Construction and Vegetation Change Emissions

Prior to issuing grading permits for village-level development within the RMDP/SCP project site, Los Angeles County shall confirm that the project applicant or its designee shall fully mitigate the related construction and vegetation change GHG emissions (the "Incremental Construction GHG Emissions") by relying upon one of the following compliance options, or a combination thereof, in accordance with the project applicant-submitted Newhall Ranch GHG Reduction Plan (GHG Reduction Plan; see Technical Report Appendix F contained in AEA Appendix 1):

- Directly undertake or fund activities that reduce or sequester GHG emissions and retire the associated GHG reduction credits in a quantity equal to the Incremental Construction GHG Emissions; or
- Obtain and retire carbon credits that have been issued by a recognized and reputable carbon registry, as described in the GHG Reduction Plan, in a quantity equal to the Incremental Construction GHG Emissions.

Involvement in at least one of the actions listed above would be sufficient to offset the GHG emissions associated with construction- and vegetation change-related to project implementation. The sum of purchased GHG reduction credits and/or carbon credits shall equal the total emissions generated during construction activities and vegetation removal as amortized over the life of the project (i.e., 30 years). Carbon credits shall be of sufficient criteria to meet the standards of an adequate carbon credit through a reputable carbon registry. Carbon credits purchased to offset construction and vegetation emissions shall be real, additional, quantifiable, enforceable, validated, and permanent. The year of full buildout (2030), the project applicant shall engage in a one-time purchase of carbon offsets that can demonstrate GHG reductions shall continue over the life of the project on a yearly basis.

Mitigation Measure 2-10 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of grading permits. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-10 prior to issuing grading permits. Issuance of grading permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-10 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-10 would reduce construction- and vegetation change-related GHG emissions by 7,808 MT CO_2e/year. Details on this measure, including estimated reductions, supporting data and implementation mechanisms are provided in Technical Report Tables ES-2 and ES-3 and Technical Report Appendices F and K, all contained in AEA Appendix 1.

Mitigation Measure 2-11: Building Retrofit Program

Prior to the issuance of building permits for every 100 residential units or 100,000 square feet of commercial development for each village-level project, the project applicant or its designee shall provide proof of funding of the proportional percentage of the Building Retrofit Program (Retrofit Program), as included in Technical Report Appendix G contained in AEA Appendix 1, to Los Angeles County. ("Commercial development" includes retail, light industrial, office, hotel and mixed-use buildings.) Building retrofits covered by the Retrofit Program can include, but are not limited to: cool roofs, solar panels, solar water heaters, smart meters, energy efficient lighting (including, but not limited to, light bulb replacement), energy efficient appliances, energy efficient windows, insulation, and water conservation measures.

The Retrofit Program shall be implemented within the geographic area defined to include Los Angeles County and primarily within disadvantaged communities, as defined by the Retrofit Program, or in other areas accepted by the Los Angeles County Planning Director.

Funding shall be applied to implement retrofits strategies identified in the Retrofit Program or other comparable strategies accepted by the Los Angeles County Planning Director.

The Retrofit Program would reduce emissions through the replacement of existing and less efficient technologies and addition of low-emission infrastructure. Cool roofs and improved insulation keep the internal temperatures of buildings low, thus reducing dependency on heating, ventilation and air conditioning systems and the indirect GHG emissions produced from their energy use. Solar panels and solar water heaters employ the sun's energy to heat and power buildings to meet energy demands while reducing GHG emissions from electricity and natural gas. Use of energy efficient lighting, meters, appliances, and windows lower the overall energy demand of a building or structure requiring less energy; therefore, lowering the rate of energy-related fossil fuel combustion. Implementation of water conservation strategies further reduce GHG emissions associated with water and wastewater treatment and conveyance.

Mitigation Measure 2-11 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of building permits for a proportional number of residential units or square feet of commercial space. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-11 prior to issuing building permits. Issuance of buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-11 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-11 would reduce operations-related GHG emissions by 1,000 MT CO_2e/year from the energy sector. Detailed calculations showing the estimated reduction, along with supporting data, are shown in Technical Report Tables ES-3 and 4-9 and Technical Report Appendix G, all contained in AEA Appendix 1.

Mitigation Measure 2-12: Off-Site Electric Vehicle Chargers

Prior to the issuance of the first building permit for the RMDP/SCP project site, the project applicant or its designee shall provide Los Angeles County with proof of installation of EV charging stations capable of serving 20 off-site parking spaces. Thereafter, the project applicant or its designee shall provide Los Angeles County proof of installation of EV charging stations prior to the issuance of residential and commercial building permits per the following ratios: one (1) off-site parking space shall be served by an electric vehicle charging station for every 30 dwelling units, and one (1) off-site parking space shall be served by an electric vehicle charging station for every 7,000 square feet of commercial development. ("Commercial development" includes retail, light industrial, office, hotel and mixed-use buildings.) Off-site EV charging stations capable of servicing 2,036

parking spaces would be required if the maximum allowable development facilitated by the RMDP/SCP project occurs; fewer EV charging stations would be required if maximum build-out under the RMDP/SCP project does not occur.

The EV charging stations shall achieve a similar or better functionality as a Level 2 charging station and may service one or more parking spaces. In the event that the installed charging stations use more superior functionality/technology than Level 2 charging stations, the parameters of the mitigation obligation (i.e., number of parking spaces served by EV charging stations) shall reflect the comparative equivalency of Level 2 charging stations to the installed charging stations on the basis of average charge rate per hour. For purposes of this equivalency demonstration, Level 2 charging stations shall be assumed to provide charging capabilities of 25 range miles per hour.

The EV charging stations shall be located within the geographic area defined to include Los Angeles County, and in areas that are generally accessible to the public. For example, the charging stations may be located in areas that include, but are not limited to, retail centers, employment centers, recreational facilities, schools, and other categories of public facilities.

The project would contribute to reductions from the transportation sector through incorporation of off-site EV charging stations. Use of ZEVs results in a reduction of GHG emissions from fossil fuel-combusting engines. Further, the electricity supplied to EV charging stations may originate from renewable resources provided by public utilities, as specified through RPS, or on-site sources of renewable energy. As discussed above in Section 2.2, Regulatory Setting, deployment of SB 350 would require public utilities to achieve a 50 percent renewable portfolio by 2030, the year of project buildout.

Mitigation Measure 2-12 is considered feasible and enforceable mitigation because the project applicant or its designee shall be required to comply with the standards and components of the measure prior to issuance of an incremental number of building permits for residential and commercial uses. Los Angeles County shall hold the project applicant or its designee accountable for meeting the criteria of Mitigation Measure 2-12 prior to issuing building permits. Issuance of buildings permits shall be contingent upon the project applicant or its designee providing adequate evidence as to implementation of Mitigation Measure 2-11 as specified.

As shown in below Table 2.3-4, implementation of Mitigation Measure 2-12 would reduce operations-related GHG emissions by 39,813 MT CO_2e/year from the transportation sector. Detailed calculations showing the estimated reduction are provided in Technical Report Tables ES-3 and 4-4 in AEA Appendix 1.

Mitigation Measure 2-13: Implement a GHG Reduction Plan

In addition to Mitigation Measures 2-1 through 2-12, the project applicant shall offset GHG emissions to zero by funding activities that directly reduce or sequester GHG emissions or, if necessary, obtaining carbon credits through the Newhall Ranch GHG Reduction Plan. The project applicant-submitted Newhall Ranch GHG Reduction Plan focuses on achieving GHG reductions or sequestration through the direct investment in specific programs or projects in coordination with an accredited carbon registry, such as the Climate Action Reserve. If these direct investment efforts do not achieve an adequate amount of GHG reductions, the project applicant can obtain carbon credits from accredited carbon registries.

SCAQMD recommends that mitigation be considered in the following prioritized manner: (1) project design feature/on-site reduction measures; (2) off-site within neighborhood; (3) off-site within district; (4) off-site within state; and (5) off-site out of state (SCAQMD 2008). Prior to issuing building permits for development within the project site, Los Angeles County shall confirm that the project applicant or its designee shall fully offset the project's remaining (i.e., post implementation of Mitigation Measures 2-1 through 2-12) operational GHG emissions over the 30-year project life associated with such building permits ("Incremental Operational GHG Emissions) by relying upon one of the following compliance options, or a combination thereof, in accordance with the Newhall Ranch GHG Reduction Plan:

- Demonstrate that the project applicant has directly undertaken or funded activities that reduce or sequester GHG emissions ("Direct Reduction Activities") that are estimated to result in GHG reduction credits, as described in the GHG Reduction Plan, and retire such GHG reduction credits in a quantity equal to the Incremental Operational GHG emissions;

- Provide a guarantee that it shall retire carbon credits issued in connection with Direct Reduction Activities in a quantity equal to the Incremental Operational GHG emissions;

- Undertake or fund Direct Reduction Activities and retire the associated carbon credits in a quantity equal to the Incremental Operational GHG Emissions; or

- If it is impracticable to fully offset Incremental Operational Emissions through the Direct Reduction Activities, the project applicant or its designee may purchase and retire carbon credits that have been issued by a recognized and reputable, accredited carbon registry in a quantity equal to the Incremental Operational GHG Emissions.

Compliance with MM 2-13 shall be demonstrated incrementally prior to obtaining building permits, and shall in the context of the project overall follow the preferred geographic hierarchy recommended by SCAQMD, discussed above. Incremental Operational GHG emissions shall be equal to the sum of the number of proposed residential units covered by the applicable building permit multiplied by 108.89 MT CO_2e and every thousand square feet of proposed commercial development covered by the applicable building permit multiplied by 506.86 MT CO_2e.

See Technical Report Appendix K, contained in AEA Appendix 1 for detailed derivation of these estimates for the project.

Implementation of Mitigation Measure 2-13 shall be adequate to fully mitigate the Incremental Operational GHG Emissions through direct investment in GHG reduction activities and/or the efficacy of carbon credits and the reductions they produce. The parameters of the compliance options provided above ensure that the carbon offsets purchased by the project applicant meet the criteria of a successful and effective offset. To be accredited by a recognized carbon registry, carbon offsets must demonstrate that they are real, additional, quantifiable, enforceable, validated, and permanent. Carbon offsets purchased following project implementation shall meet these standards, and shall produce levels of carbon offsetting on a yearly basis to mitigate the Incremental Operation GHG Emissions during project implementation.

The carbon offsets associated with the aforementioned compliance responses are considered appropriate and applicable mitigation for the Incremental Operational GHG Emissions produced by the project following deployment of Mitigation Measures 2-1 through 2-12. Accredited projects and programs participating in local, regional, and global carbon markets shall be subject to the standards enforced by carbon registries. If it is found that a project or program loses its ability to meet the criteria of being real, additional, quantifiable, enforceable, validated, and permanent, it loses its accreditation as an active carbon reducing or sequestrating action. The carbon credits purchased as a result of Mitigation Measure 2-13 shall be subject to the same standards. In the event that a project or program providing offsets to the project applicant loses its accreditation, the project applicant shall comply with the rules and procedures of retiring offsets specific to the registry involved and will undertake additional direct investments or purchase an equivalent number of credits to recoup the loss.

Project Emissions with Implementation of Mitigation Measures 2-1 through 2-13

GHG reductions associated with each mitigation measure were quantified and are reported in AEA Appendix 1, along with underlying assumptions and supporting data. Mitigation Measures 2-1 through 2-12 reduce the project's GHG emissions by 289,043 MT CO_2e/year. The project would need additional reductions pursuant to Mitigation Measure 2-13 to meet its zero net emissions commitment. Implementation of Mitigation Measure 2-13 further reduces project-related GHG emissions to zero net emissions. Table 2.3-4 shows estimated reductions associated with each mitigation measure and how the project will meet its

commitment to achieve zero net emissions of GHGs. References to corresponding tables in AEA Appendix 1 are included to provide additional details on reduction quantification.

Table 2.3-4 Summary of Greenhouse Gas Emissions Reductions Associated with Mitigation Measures at Full Buildout (2030)

Mitigation Measure	Emissions Reduction (MT CO_2e/year)	Source (AEA Appendix 1)
Mobile Sources		
MM 2-4: Residential EV Chargers and Vehicle Subsidy	53,724	Tables ES-3 and 4-3 Appendix H
MM 2-5: Commercial Development Area EV Chargers	39,109	Tables ES-3 and 4-4
MM 2-6: Transportation Demand Management Plan	60,168	Tables ES-3 and 4-5 Appendix E
MM 2-7: Traffic Signal Synchronization	8,212	Tables ES-3 and 4-6 Appendix I
MM 2-8: Electric School Bus Program	157	Tables ES-3 and 4-7
MM 2-9: Electric Transit Bus Subsidy	619	Tables ES-3 and 4-8
MM 2-12: Off-Site EV Chargers	39,813	Tables ES-3 and 4-4
Electricity[1]		
MM 2-1: Residential Zero Net Energy	18,930	Tables ES-3, 4-1a, 4-1b, 4-1c, and 4-1d Appendix C
MM 2-2: Commercial Zero Net Energy	24,843	Tables ES-3, 4-2a, 4-2b, 4-2c, and 4-2d Appendix C
MM 2-11: Building Retrofit Program	500	Tables ES-3 and 4-9 Appendices G and J
Natural Gas[1]		
MM 2-1: Residential Zero Net Energy	11,726	Tables ES-3, 4-1a, 4-1b, 4-1c, and 4-1d Appendix C
MM 2-2: Commercial Zero Net Energy	612	Tables ES-3, 4-2a, 4-2b, 4-2c, and 4-2d Appendix C
MM 2-3: Swimming Pool Heating	22,356	Tables ES-3 and 2-14a
MM 2-11: Building Retrofit Program	500	Tables ES-3 and 4-9 Appendices G and J
Vegetation Removal		
MM 2-10: Offsetting Construction and Vegetation Change Emissions	1,335	Tables ES-2 and ES-3 Appendices F and K
Construction		
MM 2-10: Offsetting Construction and Vegetation Change Emissions	6,437	Tables ES-2 and ES-3 Appendices F and K
Subtotal GHG Reductions by Measures 1 – 12 (Mitigation)	289,043	Table ES-3
Offset of Remaining Emissions (GHG Reduction Plan)		
MM 2-13: Zero GHG Plan (Mobile)	202,011	Table ES-2
MM 2-13: Zero GHG Plan (electricity) [1]	-4,880[2]	Table ES-2
MM 2-13: Zero GHG Plan (Natural Gas) [1]	8,192	Table ES-2

Table 2.3-4 Summary of Greenhouse Gas Emissions Reductions Associated with Mitigation Measures at Full Buildout (2030)

Mitigation Measure	Emissions Reduction (MT CO_2e/year)	Source (AEA Appendix 1)
MM 2-13: Zero GHG Plan (Area Sources)	367	Table ES-2
MM 2-13: Zero GHG Plan (Water Consumption and Wastewater Treatment)	8,190	Table ES-2
MM 2-13: Zero GHG Plan (Solid Waste Generation)	23,179	Table ES-2
Subtotal GHG Reductions by Measure 13 (GHG Reduction Plan)	237,059	Table ES-2
Total Reductions	526,103[3]	

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; MM=mitigation measure; EV=electric vehicle; TDV=Time Dependent Valuation; CEC=California Energy Commission; ZNE=Zero Net Energy

[1] The zero net energy mitigation measures (MM 2-1 and MM 2-2) are applied by assuming 80% of the mitigation applies to electricity and 20% of the mitigation applies to natural gas consumption associated with the respective land use type (residential and non-residential)

[2] Emissions reductions from direct and indirect energy consumption appear as a negative to represent TDV energy savings from use of photovoltaics combined with variations in natural gas pricing consistent with CEC's TDV model to achieve ZNE.

[3] Summarized emissions by mitigation measure are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

GHG emissions are anticipated to decrease into the future based on ongoing improvements in technology and implementation of regulations to reduce GHGs (i.e., the reductions of energy-related emissions due to 50 percent RPS based on SB 350 and the reductions in mobile source-related emissions due to fleet turnover and fuel efficiency improvements due to Pavley and ACC). Based on modeling performed for the project and incorporation of the above-mentioned mitigation measures, carbon offsets totaling 237,059 MT CO_2e/year would be required over the 30-year project life to meet the zero net commitment. This translates to 7,026,846 MT CO_2e in total carbon offsets required. Technical Report Appendix K contained in AEA Appendix 1 includes detailed calculations of the remaining net operational emissions over the project's operational life of 30 years, and the relationship to the proposed residential and commercial land uses and the offset ratios identified in MM 2-13. This estimate of offsets is conservative in that it likely overstates the amount of GHG emissions that would need to be offset because additional regulatory programs and technology will likely be developed in the future under new state mandates, which will reduce the actual GHG emissions associated with the project at buildout.

Table 2.3-5 shows project emissions for each source after implementation of Mitigation Measures. The Sub-Total emissions value remaining after implementation of Mitigation Measures 2-1 through 2-12 represents the amount that would need to be offset through implementation of Mitigation Measure 2-13 to meet the zero net emissions commitment for the project.

Table 2.3-5 Summary of Annual Greenhouse Gas Emissions at Full Buildout

Emissions Activity	Emissions (MT CO_2e/year)		
	Existing	Unmitigated	Post Mitigation
Mobile Sources	152	403,814	202,011
Electricity[1]	–	39,393	-4,880[2]
Natural Gas[1]	–	43,386	8,192
Area Sources	7,883	367	367
Water Consumption and Wastewater Treatment	2,987	8,190	8,190
Solid Waste Generation	–	23,179	23,179
Vegetation Removal	–	1,335	0

Table 2.3-5 Summary of Annual Greenhouse Gas Emissions at Full Buildout

Emissions Activity	Emissions (MT CO_2e/year)		
	Existing	Unmitigated	Post Mitigation
Construction	–	6,437	0
Sub-Total Annual Emissions	11,021	526,103	237,059
MM 2-13 GHG Reductions			-237,059
Total Annual Emissions[2]			0[3]

Notes: MT CO_2e/year=metric tons of carbon dioxide equivalent per year; MM=mitigation measure; TDV = Time Dependent Valuation; CEC=California Energy Commission; ZNE = zero net energy

[1] Unmitigated electricity and natural gas emissions are split based on the CalEEMod output and the swimming pool calculation. The ZNE mitigation measures are split by assuming 78% of the mitigation offsets electricity and 22% offsets natural gas, consistent with actual emissions reductions. The off-site building retrofits are split assuming 50% electricity and 50 % natural gas. Refer to Technical Report Section 2.3.2 and Tables 2-13a through 2-14b of AEA Appendix 1 for more detailed assumptions.

[2] Emissions reductions from direct and indirect energy consumption appear as a negative to represent TDV energy savings from use of photovoltaics combined with variations in natural gas pricing consistent with CEC's TDV model to achieve ZNE. Refer to Technical Report Tables 4-1a through 4-2d and Appendix J of AEA Appendix 1 for more detail.

[3] Summarized emissions by sector are rounded to the nearest whole number; however, total emissions reflect the sum of exact emissions levels.

Source: Modeling conducted by Ramboll Environ in 2016. See AEA Appendix 1 for detailed calculations.

Significance after Mitigation

Adoption and implementation of Mitigation Measure 2-1 through 2-13 would reduce mobile source-, electricity-, natural gas-, vegetation removal-, and construction-related emissions by 526,103 MT CO_2e/year (see Tables 2.3-2, 2.3-3, and 2.3-4). These measures reduce the projected unmitigated GHG emissions levels of the project (unmitigated emissions of 526,103 MT CO_2e/year above existing conditions) that would otherwise occur on the project site, leading to no net contributions of GHG emissions from the project, or zero net emissions. Because the project would result in no net increase of GHG emissions after implementation of mitigation measures, there would be no contribution of GHG emissions to cumulative GHG emissions influencing global climate change.

In addition, because the project would result in no net increase of GHG emissions, it would not conflict with any plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The state, and by extension regional and local climate policy is rooted in achieving emissions level below the reference year of 1990 and is based on levels established by scientific evidence to avoid the most adverse impacts of climate change. Therefore, relevant plans, such as ARB's Scoping Plan, SCAG's RTP/SCS, and Los Angeles County's CCAP, all establish non-zero targets (i.e., some level of positive net emissions above existing conditions for land developments to accommodate planned growth) to achieve future GHG emissions targets. By achieving the project applicant's commitment to reach zero net emissions, the feasibility and reliability of which has been demonstrated in the analysis above, the project would lead to no net increase in GHG emissions and would not, therefore, result in any adverse change that could conflict with any relevant plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

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Air Resources Board

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Environmental Protection

Edmund G. Brown Jr.
Governor

November 3, 2016

Chuck Bonham, Director
California Department of Fish and Wildlife
1416 9th Street, 12th Floor
Sacramento, California 95814

Dear Mr. Bonham:

As you requested, California Air Resources Board (ARB) staff reviewed the technical basis for the net zero greenhouse gas (GHG) determination in the Additional Environmental Analysis prepared for the Newhall Ranch Resource Management and Development Plan and Spineflower Conservation Plan.

ARB staff consulted with Department of Fish and Wildlife staff and technical experts at Ascent Environmental, the principal consultant assisting the Department. In doing so, ARB staff reviewed the technical documentation provided for the evaluation of the project's total estimated GHG emissions and the reductions in emissions to be achieved through the mitigation measures. Based on staff's review, ARB finds the documentation provides an adequate technical basis to determine that the project would not result in any net additional GHG emissions after the mitigation measures are fully implemented.

If you have any questions regarding staff's analysis, please contact Mr. Kurt Karperos by email at kurt.karperos@arb.ca.gov or by phone at (916) 322-2739.

Sincerely,

Richard W. Corey
Executive Officer

cc: Kurt Karperos
Deputy Executive Officer