



2045 Climate Action Plan

County of Los Angeles

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FINAL DRAFT

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LAND ACKNOWLEDGMENT

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

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

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

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ACRONYMS

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

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

CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH ₄	methane
CHP	combined heat and power
Climate Vulnerability Assessment	<i>LA County Climate Vulnerability Assessment</i>
CNG	compressed natural gas
CNRA	California Natural Resources Agency
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
County	County of Los Angeles government
Countywide	Los Angeles County in its entirety, inclusive of both unincorporated areas and all 88 incorporated cities
COVID-19	SARS-CoV-2 or coronavirus disease 2019
CPA	Clean Power Alliance
CPUC	California Public Utilities Commission
CRIS	Climate Registry Information System
CSO	Chief Sustainability Office
CVA	Climate Vulnerability Assessment
CVRP	Clean Vehicle Rebate Project
DER	distributed energy resource
DHS	Department of Health Services
DOE	U.S. Department of Energy
DPH	Department of Public Health
DPR	direct potable reuse
DRP	Department of Regional Planning
DU	dwelling unit
e-bike	electric bicycle
ECAA	Energy Conservation Assistance Act
EGIA	Electric & Gas Industries Association

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

ICLEI	U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions
II	internal-internal
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ISD	Internal Services Department
IX	internal-external
JWPCP	Joint Water Pollution Control Plant
kBtu	one thousand British thermal units
kW	kilowatt
LACDA	Los Angeles County Development Authority
LACSD	Los Angeles County Sanitation Districts
LADWP	Los Angeles Department of Water and Power
LARC	Los Angeles Regional Collaborative
LASD	Los Angeles County Sheriff's Department
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design
LFG	landfill gas collection
LiHEAP	Low Income Home Energy Assistance Program
LIWP	Low Income Weatherization Program
LNG	liquefied natural gas
LTF	Local Transportation Fund
MAP-21	Moving Ahead for Progress in the 21st Century
Metro	Los Angeles County Metropolitan Transportation Authority
MMTCO ₂	million metric tons of carbon dioxide
MRR	Mandatory Greenhouse Gas Reporting Regulations
MSRC	Mobile Source Air Pollution Reduction Review Committee
MTCO ₂ e	metric tons of carbon dioxide equivalent
MW	megawatt
MWD	Metropolitan Water District of Southern California

N ₂ O	nitrous oxide
ND	negative declaration
NF ₃	nitrous trifluoride
NGV	natural gas vehicle
NZEV	near-zero-emission vehicle
Offsite Program	Offsite GHG Reduction Program
OurCounty Sustainability Plan	<i>OurCounty: Los Angeles Countywide Sustainability Plan</i>
PACE	Property Assessed Clean Energy
Paris Agreement	2016 Paris Climate Agreement
Parks	Department of Parks & Recreation
PEV	plug-in electric vehicle
PFC	perfluorocarbon
PHEV	plug-in hybrid electric vehicle
PM	particulate matter
PV	photovoltaic
PW	Department of Public Works
RGAP	Ridership Growth Action Plan
RMP	Refrigerant Management Program
RPS	Renewables Portfolio Standard
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SB 32	California Global Warming Solutions Act of 2006
SB 100	Renewable Portfolio Standards
SB 606	Water Management Planning
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Monitoring District
SCE	Southern California Edison
SEA	Significant Ecological Area
SF ₆	sulfur hexafluoride

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

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

GLOSSARY

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

Adaptation	The effort to adjust practices and development in response to climate change to lessen future impacts.
Anaerobic digestion	A process by which organic matter, such as food waste or sewage, is broken down in the absence of oxygen to produce biogas and biofertilizer.
Biodiversity	The variety and variability of flora, fauna, and ecosystems. Biodiversity can be observed on macro levels, micro levels, and in between. Biodiversity is complex, fragile, and increasingly threatened by urbanization and climate change. Rich biodiversity supports many aspects of human life, from food and medicine to environmental quality.
Biodegradable Products Institute (BPI) certification	A certification for environmentally friendly products that meet high-quality compostable standards, and are proven to compost without toxic or lingering plastic residues.
Biogas	A type of gas, composed primarily of methane, derived from the process of bacterial decomposition of sewage, manure, food, plant crops, or other organic waste products.
Biogenic CO ₂	Carbon emissions released through the combustion or decomposition of natural and organic sources (i.e., trees, soil, wood).
Biomass conversion	Thermal conversion of organic materials such as wood waste, lawn clippings, agricultural waste, and nonrecyclable paper, when separated from other waste.
Building decarbonization	The process of creating buildings that contribute zero GHG emissions. For example, a newly constructed building can incorporate reused, recycled, and other low-carbon-intensity materials. Operationally, the building is energy efficient and uses renewable, zero-carbon energy sources for heating, cooling, and power.
Carbon dioxide (CO ₂)	A GHG made up of one carbon atom and two oxygen atoms that is released primarily through the burning of fossil fuels, other hydrocarbons, solid waste, and trees and wood products. Changes in land use also play a have an impact. Deforestation and soil degradation add carbon dioxide to the atmosphere, while forest regrowth takes it out of the atmosphere. While carbon dioxide is naturally occurring, the proportion of carbon dioxide in our atmosphere is increasing as a result of human activities. Increasing concentration levels of carbon dioxide and other GHGs contribute to climate change.

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

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

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

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

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

Intergovernmental Panel on Climate Change (IPCC)	A United Nations body that evaluates current impacts and future risks of a changing climate. The IPCC prepares comprehensive scientific reports on climate change and provides technical and policy-relevant guidelines for reducing the rate at which climate change occurs.
Impermeable areas	Solid surfaces, such as paved roads and parking lots, that do not allow water to penetrate into the ground below.
kBtu	One thousand British thermal units. Often used to calculate the energy use intensity per square foot of buildings.
Life-cycle carbon intensity	The overall GHG emissions associated with all stages of the life cycle of a commercial product, process, or service, including each stage of its production and use. For instance, in the case of a manufactured product, GHG emissions from raw-material extraction and processing (cradle), through the product's manufacture, distribution, and use, to the recycling or final disposal of the materials composing it (grave) are part of the product's life-cycle carbon intensity.
Light-duty vehicle	A passenger vehicle with a maximum gross vehicle weight rating of 8,500 pounds.
Medium-duty vehicle	A passenger vehicle with a maximum gross vehicle weight rating from 8,501 to 10,000 pounds.
Methane (CH ₄)	A gas made up of one carbon atom and four hydrogen atoms. Methane is the main component of natural gas, commonly used as a fuel for heating. Methane is released during the production and distribution of natural gas, but also through livestock and other agricultural practices and by the decay of organic waste in landfills. Like carbon dioxide, methane is a GHG and exacerbates climate change. However, methane has a much higher global warming potential than carbon dioxide, meaning that methane has a much larger effect than the same amount of carbon dioxide.
Microgrid	An electrical distribution network that is connected to two or more buildings in a local area that can enter into "island mode" (i.e., operates in isolation from the central or local electricity distribution network) and provide power to buildings without using the central grid.
Micromobility	Transportation options that include personal vehicles meant to carry one or two passengers such as bicycles, small electric cars, or scooters.

Micro transit	Public or private multi-passenger transportation services that serve passengers using dynamically generated routes; they provide transit-like service on a smaller, more flexible scale.
Mode	A particular form of travel such as walking, traveling by automobile, traveling by bus, or traveling by train.
Native population	The indigenous inhabitants who have lived or currently live in the geographic area within the current boundaries of Los Angeles County before and after the arrival of Europeans.
Natural forests	Native trees and related vegetation in natural land areas where there are no clearly visible indications of human activities and where the ecological processes are not significantly disturbed.
Natural gas	A non-renewable hydrocarbon consisting largely of methane, a potent greenhouse gas. See also <i>fossil fuels</i> .
Near-zero-emission vehicle (NZEV)	Plug-in hybrid electric vehicles powered by both an internal combustion and battery-electric power train that are capable of operating like a zero-emission vehicle for some distances. NZEVs are considered a bridge technology that will help the development of the full zero-emission vehicle market.
Negative-carbon concrete	A process where carbon is captured during the production of concrete and then emitted over time during the concrete's lifetime, resulting in a carbon-negative effect.
Net Zero Carbon	A system, process, building, or community that mitigates any GHG emissions associated with its resource use or does not use energy sources that contribute to GHG emissions.
Net Zero Waste	A system, process, building, or community that sends no waste to landfills by reducing consumption and maximizing recycling and composting.
Net Zero Water	A system, process, building, or community that reduces water consumption and does not rely on off-site water sources to meet any of its water demand. Instead, alternative on-site sources such as rainwater collection or wastewater treatment and reuse are used.
Non-biogenic CO ₂	Carbon emissions from the combustion of fossil fuels.
Ordinance	A piece of legislation enacted by a municipal authority.

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

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

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

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

Zero net energy (ZNE)
building

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

EXECUTIVE SUMMARY

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

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

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

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

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

The objectives of the 2045 CAP are as follows:

1. Identify detailed programs, actions, and performance goals to achieve the climate action policies of the General Plan.
2. Identify GHG emissions reduction targets tailored to the unincorporated County that closely align with state and County climate goals.
3. Provide a road map for reducing GHG emissions to achieve the County's GHG emissions reduction targets.
4. Encourage sustainable housing production at all levels of affordability, including increasing housing densities near transit to the extent allowed in the General Plan.
5. Demonstrate a level of GHG emissions below which the County would have less than cumulatively considerable GHG impacts for future environmental review projects and provide California Environmental Quality Act (CEQA) streamlining for development projects (serve as a "qualified CAP") via the 2045 Climate Action Plan CEQA Streamlining Checklist (2045 CAP Checklist).

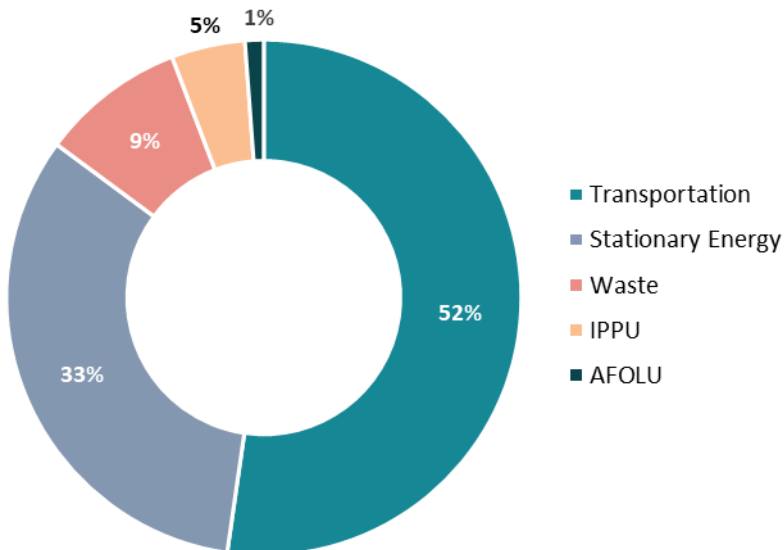
The 2045 CAP is an update to the 2020 CCAP, and it sets new GHG emissions reduction targets beyond the 2020 timeframe that are consistent with state goals pursuant to SB 32, AB 1279, and the 2022 Scoping Plan. The 2045 CAP includes the following elements:

- A GHG emissions inventory from communitywide activities in unincorporated Los Angeles County in 2018, along with a baseline inventory for 2015.
- Projections of future emissions for 2030, 2035, and 2045.
- GHG emissions reduction targets for 2030, 2035, and 2045.
- A long-term aspirational goal for carbon neutrality by 2045.

- Climate strategies, measures, and actions to reduce GHG emissions from major sectors.
- Technical modeling appendix to explain the GHG emissions reduction estimates.
- A consideration of environmental justice and equity concerns.
- Implementation and monitoring measures to ensure successful climate action.
- A new development review checklist to allow future projects to streamline GHG emissions analyses pursuant to the California Environmental Quality Act (CEQA).

Greenhouse Gas Emissions in Unincorporated Los Angeles County

Estimated GHG emissions generated by community activities in unincorporated Los Angeles County in 2018 (the most recent inventory completed) were approximately 5.2 million metric tons of carbon dioxide equivalent (MTCO₂e). The largest contributor to these emissions (at 52 percent) is the transportation sector, which consists mostly of on-road vehicles. The second-largest contributor (at 33 percent) is the stationary energy sector, which includes emissions from electricity generation facilities, landfill-to-gas facilities, district energy systems, and the use of natural gas use in buildings. It also includes emissions from fossil fuel extraction and fugitive emissions from oil and natural gas systems. Together, these two sectors constitute approximately 85 percent of all community-scale GHG emissions in unincorporated Los Angeles County. The remaining sources are waste and wastewater generation (9 percent), industrial processes and product use (5 percent), and the agriculture, forestry, and other land use (AFOLU) sector (1 percent). **Figure ES-1** shows a breakdown by sector of 2018 communitywide GHG emissions for unincorporated Los Angeles County.



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

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

CAP Strategies to Reduce Greenhouse Gas Emissions

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

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

The 2045 CAP includes 10 strategies and 25 measures that, when combined, achieve all three of the GHG emissions reduction targets for 2030, 2035, and 2045. These strategies, measures, and actions also put unincorporated Los Angeles County on an aggressive path toward carbon neutrality and are estimated to reduce annual emissions by more than 1.5 million MTCO₂e in 2030, more than 2 million MTCO₂e in 2035, and nearly 3 million MTCO₂e in 2045. All strategies require that the County employ climate leadership and lead by example, recognizing the County's important role as a convener and leader in the region. Reaching the targets and goals of the 2045 CAP requires regional collaboration and partnerships with various stakeholders, including communities, local governments, and the State of California. The County will continue to foster these partnerships to move toward a low-carbon future.

Energy Supply

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



Energy Supply Strategy

- Decarbonize the energy supply.

Transportation

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



Transportation Strategies

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

Building Energy and Water

Buildings are a major source of emissions because of their heating, cooling, and power needs. Efforts to decarbonize building energy use will require a mix of energy efficiency programs and a shift to carbon-free alternatives for fossil fuel appliances.



Building Energy and Water Strategies

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

Waste

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

Waste Strategy

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



Agriculture, Forestry, and Other Land Use

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

Agriculture, Forestry, and Other Land Use Strategies

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



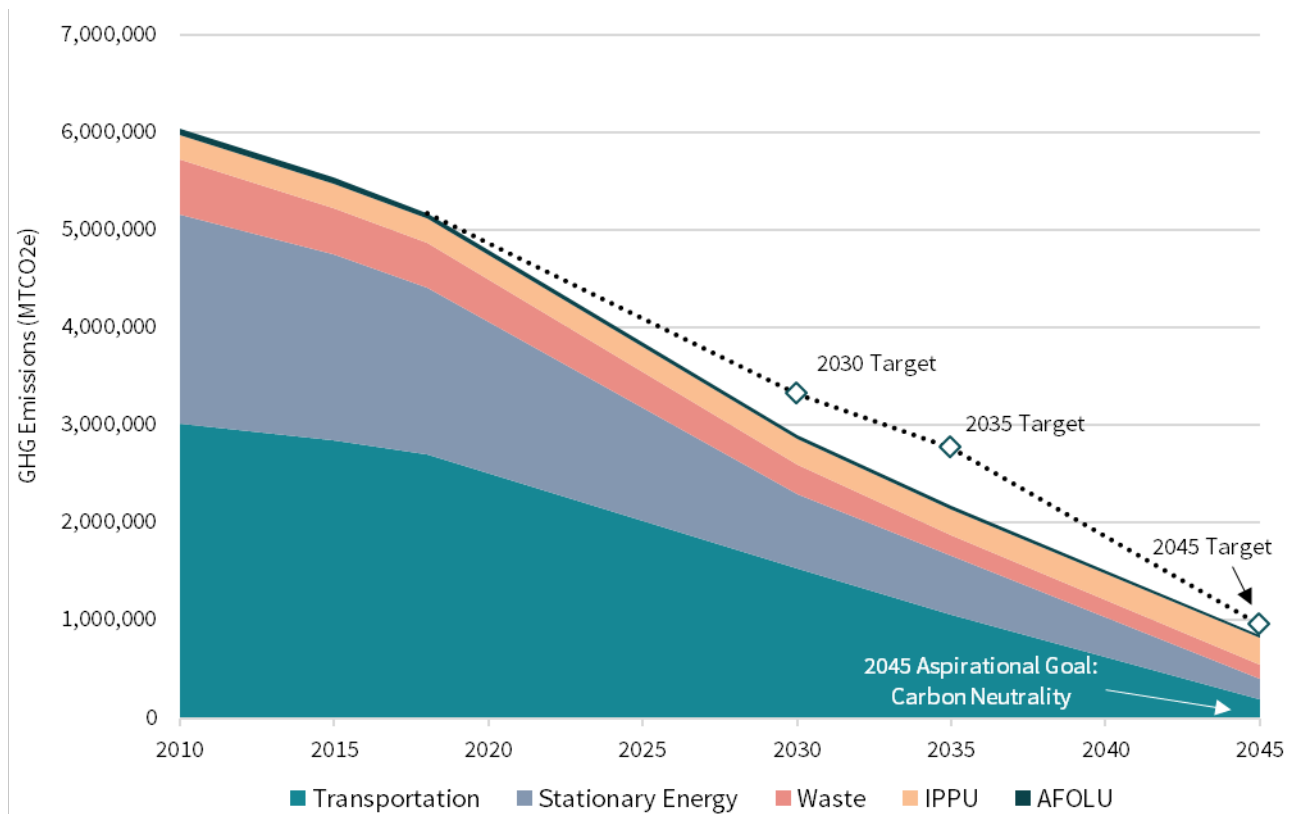
The Path to Carbon Neutrality

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

However, a portion of unincorporated Los Angeles County's emissions cannot currently be shown to be fully eliminated by 2045, given existing technology limitations. These remaining emissions, also known as *residual emissions*, include a small amount of natural gas use in buildings as well as emissions from fossil fuel-powered vehicles and off-road equipment, oil and gas industries, manufacturing facilities, landfills, wastewater treatment, fluorinated products, and fertilizer use. Total residual emissions in 2045 are estimated to be approximately 850,000 MTCO₂e.

The County expects that new technologies developed over the next 25 years, along with evolving state regulations and financial incentives, will further reduce these residual emissions. The County will continually monitor the state of these technologies and will update the 2045 CAP every five years to adjust policies and programs to take advantage of these advancements.

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



Abbreviations: AFOLU = agriculture, forestry, and other land use; GHG = greenhouse gas; IPPU = industrial processes and product use; MTCO₂e = metric tons of carbon dioxide equivalent

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

CHAPTER 1

Introduction

1.1 Purpose and Scope

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

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

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

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

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

The objectives of the 2045 CAP are as follows:

1. Identify detailed programs, actions, and performance goals to achieve the climate action policies of the General Plan.
2. Identify GHG emissions reduction targets tailored to the unincorporated County that closely align with state and County climate goals.
3. Provide a road map for reducing GHG emissions to achieve the County's GHG emissions reduction targets.
4. Encourage sustainable housing production at all levels of affordability, including increasing housing densities near transit to the extent allowed in the General Plan.
5. Demonstrate a level of GHG emissions below which the County would have less than cumulatively considerable GHG impacts for future environmental review projects and provide California Environmental Quality Act (CEQA) streamlining for development projects (serve as a "qualified CAP") via the 2045 Climate Action Plan CEQA Streamlining Checklist (2045 CAP Checklist).

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

The 2045 CAP guides County actions through a comprehensive suite of strategies, measures, and actions that are geographically specific to unincorporated Los Angeles County and is to be implemented through County and external agency partnerships. It accounts for GHG emission reduction programs and requirements implemented by the County in recent years that were not included in the 2020 CCAP, while identifying new programs and requirements that may require the development of ordinances. Given the broad reach of climate action, the 2045 CAP pairs with other components of the General Plan such as the Housing and Safety Elements to achieve co-benefits.

As an implementation program of the General Plan Air Quality Element, the 2045 CAP identifies County actions for carrying out the policies of the Air Quality Element. The actions identify lead and partner agencies; however, they are not exclusive and new partners can be added as needed. The actions also include general timeframes that assume the availability of adequate funding. Appendix E, *Implementation Details*, lists the aforementioned details and can be administratively updated as implementation of the 2045 CAP advances to reflect changes such as tracking metrics as new data sources are available or new funding sources are identified.

Future development projects are subject to the applicability provisions of the General Plan and are required to meet the goals and policies of the General Plan along with adopted regulatory requirements. The 2045 CAP creates a voluntary opportunity for qualifying future development projects to streamline the GHG analysis component of the project's environmental review. Appendix F, *2045 Climate Action Plan CEQA Streamlining Checklist*, discusses the opportunity and can be updated administratively as implementation of the 2045 CAP advances to reflect changes that include but are not limited to new ordinances that are adopted.

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

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

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

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

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

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



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Using the 2045 Climate Action Plan for CEQA Streamlining

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

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

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

- (1) Quantifying all primary sectors of GHG emissions associated with all activities occurring within unincorporated Los Angeles County over which the County has some level of jurisdictional control or influence¹ for 2015 through 2045;
- (2) Establishing GHG emissions reduction targets for 2030, 2035, and 2045, below which GHG emissions would not be cumulatively considerable based on the substantial evidence that the 2045 CAP is consistent with the 2022 Scoping Plan, Senate Bill (SB) 32, and AB 1279,² as well as an aspirational goal for 2045;
- (3) Analyzing community emissions for unincorporated Los Angeles County as a whole and including predicted growth expected by 2045;
- (4) Including specific mandatory and voluntary measures that quantitatively achieve the overall reduction targets for 2030, 2035, and 2045, and make progress toward the aspirational goal for 2045;

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

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

- (5) Including an implementation and monitoring program that contains performance indicators and targets, details regarding funding and financing strategies, a list of available and expected funding sources, and a table for monitoring and reporting progress on the measures and their implementing actions; and
- (6) Being adopted through a public process in compliance with CEQA.

Projects that incorporate applicable CEQA streamlining requirements, as identified in the 2045 CAP CEQA Streamlining Consistency Review Checklist (Checklist), and are consistent with the General Plan can streamline their CEQA analysis of GHG impacts without needing a separate quantitative analysis. However, a qualitative checklist-based analysis is encourage to demonstrate consistency with the 2045 CAP. The Checklist is only required if a project applicant wants to use CEQA streamlining for GHG impacts; it is not required if a project-level environmental analysis of GHG impacts is conducted. As such, the Checklist is voluntary. To demonstrate compliance with the 2045 CAP CEQA Streamlining Requirements, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emissions reduction measures. The project review checklist will be used for projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for a streamlined project-specific CEQA GHG analysis.

1.2 Climate Change Impacts

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

California's Climate Change Assessment

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

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

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

- **Drought and Precipitation.** While average precipitation is projected to change only slightly overall, the dry and wet extremes are projected to increase. This “precipitation whiplash” means that the region is likely to experience drier periods than what the region has historically experienced, followed by much wetter periods with more extreme rain events, potentially leading to increased water scarcity, mudslides, and flooding.
- **Wildfire.** Wildfires are projected to continue to increase in size, frequency, and intensity. Thirteen of the 20 most destructive wildfires in California have occurred in the past five years.⁴
- **Sea Level Rise.** Sea levels are projected to rise roughly 1–2 feet by mid-century and as much as 8–10 feet by the end of the century based on the most extreme projections. Sea level rise can exacerbate the impacts of high tides, storm surges, and heavy precipitation, and can lead to increased coastal flooding.
- **Ocean Acidification.** As levels of atmospheric carbon dioxide (CO₂) increase as a result of human activity such as burning fossil fuels, the amount of CO₂ absorbed by the ocean also increases. When CO₂ is absorbed by seawater, a series of chemical reactions occur, resulting in increased acidity. Ocean acidification can impair the ability of calcifying organisms like corals to build and maintain their shells, skeletons, and other calcium carbonate structures. Since the Industrial Revolution, the acidity of surface ocean waters has increased by 30 percent.⁵

LA County Climate Vulnerability Assessment

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

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

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

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

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

County

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

Community Stakeholders

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

1.3 Existing Laws, Regulations, and Policies

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

Table 1-1: Relevant Federal Laws and Regulations

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

NOTE:

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

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

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

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

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

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

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

LEGISLATION / REGULATION	YEAR	DESCRIPTION
AB 2127	2018	Requires the CEC, working with CARB and the CPUC, to prepare and biennially update a statewide assessment of the EV charging infrastructure needed to support the levels of EV adoption required for the state to meet its goals of putting at least 5 million ZEVs on California roads by 2030 and reducing emissions of GHGs to 40% below 1990 levels by 2030.
EO B-48-15	2018	Established a statewide goal of at least 5 million ZEVs on state roads by 2030, and installation of 200 hydrogen fueling stations and 250,000 ZEV chargers.
EO N-79-20	2020	Established a target that 100 percent of in-state sales of new passenger cars and trucks be zero-emission by 2035 and that 100 percent of medium- and heavy-duty vehicles in the state be zero-emission by 2045 and by 2035 for drayage trucks.
Advanced Clean Cars II Program	2022	Requires that by 2035 all new passenger cars, trucks, and SUVs sold in California will be zero emissions. It amends the Zero-Emission Vehicle Regulation to require an increasing number of ZEVs, and relies on advanced vehicle technologies, including battery-electric, hydrogen fuel cell electric, and plug-in hybrid EVs, to meet air quality and climate change emissions standards. It also amends the Low-Emission Vehicle Regulations to include increasingly stringent standards for gasoline cars and heavier passenger trucks to continue to reduce smog-forming emissions while the sector transitions toward 100% electrification by 2035.
Energy		
SB 1078	2002	Required that 20% of electricity retail sales be served by renewable resources by 2017.
CALGreen Code (Title 24, Part 11)	2011	Established the first mandatory green building standards code in the country.
SB 350	2015	Accelerated implementation of SB 1078 and mandated a 50% Renewables Portfolio Standard, or RPS, by 2030. SB 350 includes interim annual RPS targets with three-year compliance periods and requires that 65% of RPS procurement be derived from long-term contracts of 10 or more years.
CALGreen Code Update	2016	Affirmed energy standards for newly constructed buildings, and additions and alterations to existing buildings. Added requirements for demand reductions during critical peak periods and future solar electric and thermal system installations.
SB 100 California Renewables Portfolio Standard Program	2018	Established a goal of supplying 100% of the state's electricity from clean sources by 2045.
SB 596	2021	Requires CARB, by July 1, 2023, to develop a comprehensive strategy for the state's cement sector to achieve net zero emissions of GHGs associated with cement used in California as soon as possible, but no later than December 31, 2045. The law establishes an interim target of 40% below the 2019 average GHG intensity of cement by December 31, 2035.
SB 1020	2022	Adds interim renewable energy and zero-carbon energy retail sales of electricity targets to California end-use customers set at 90% in 2035 and 95% in 2040. It accelerates the timeline required to have 100% renewable energy and zero-carbon energy procured to serve state agencies from the original target year of 2045 to 2035. This law requires each state agency to individually achieve the 100% goal by 2035, with specified requirements.
SB 905	2022	Requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate carbon capture, utilization, or storage and CO ₂ removal projects and technology.

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

LEGISLATION / REGULATION	YEAR	DESCRIPTION
SB 1137	2022	Prohibits the development of new oil and gas wells or infrastructure in health protection zones, as defined, except for purposes of public health and safety or other limited exceptions. This law requires operators of existing oil and gas wells or infrastructure within health protection zones to undertake specified monitoring, public notice, and nuisance requirements.
SB 1075	2022	Requires CARB, by June 1, 2024, to prepare an evaluation that includes policy recommendations regarding the use of hydrogen, and specifically the use of green hydrogen, in California; a description of strategies supporting hydrogen infrastructure, including identifying policies that promote the reduction of GHGs and short-lived climate pollutants; a description of other forms of hydrogen to achieve emission reductions; and other required elements.
SB 1206	2022	Mandates a stepped sales prohibition on newly produced high-GWP HFCs to transition California's economy toward recycled and reclaimed HFCs for servicing existing HFC-based equipment. This law also requires CARB to develop regulations to increase the adoption of very low-, i.e., GWP <10, and no-GWP technologies in sectors that currently rely on higher-GWP HFCs.
Waste and Water		
AB 341	2011	Required each city, county, and regional agency to develop a source reduction and recycling element of an integrated waste management plan containing specified components, including a source reduction component, a recycling component, and a composting component. With certain exceptions, the source reduction and recycling element of that plan was required to divert 75% of all solid waste from landfill disposal or transformation by 2020, through source reduction, recycling, and composting activities.
AB 1826	2014	Required any business, defined as a commercial or public entity that generates more than 4 cubic yards of commercial solid waste per week or is a multifamily residential dwelling of 5 units or more, to arrange for recycling services.
SB 1383	2016	Established emissions reduction targets in a statewide effort to reduce emissions of short-lived climate pollutants, including methane by 40%, HFC gases by 40%, and anthropogenic black carbon by 50% below 2013 levels by 2030.
SB 606 and AB 1668	2018	Required urban and agricultural water suppliers to enact new urban efficiency standards for indoor use, outdoor use, and water lost to leaks.
Agriculture, Forestry, and Other Land Use		
EO N-82-20	2020	Sets a statewide goal to conserve at least 30% of California's land and coastal waters by 2030. This order instructed the CNRA, in consultation with other state agencies, to develop a Natural and Working Lands Climate Smart Strategy that serves as a framework to advance the state's carbon neutrality goal and build climate resilience.
SB 27	2021	Requires the CNRA, in coordination with other state agencies, to establish the Natural and Working Lands Climate Smart Strategy by July 1, 2023. This law also requires CARB to establish specified CO ₂ removal targets for 2030 and beyond as part of its 2022 Scoping Plan.
AB 1757	2022	Requires the CNRA, in collaboration with CARB, other state agencies, and an expert advisory committee, to determine by January 1, 2024, a range of targets for natural carbon sequestration, and for nature-based climate solutions, that reduce GHG emissions in 2030, 2038, and 2045. These targets must support state goals to achieve carbon neutrality and foster climate adaptation and resilience.

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

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

Abbreviations: 2022 Scoping Plan = 2022 Scoping Plan for Achieving Carbon Neutrality; AB = Assembly Bill; CALGreen Code = California Green Building Standards Code; CARB = California Air Resources Board; CEC = California Energy Commission; CNRA = California Natural Resources Agency; CO₂ = carbon dioxide; CPUC = California Public Utilities Commission; EO = Executive Order; EV = electric vehicle; GHG = greenhouse gas; GWP = global warming potential; HFC = hydrofluorocarbon; RPS = Renewable Portfolio Standard; SB = Senate Bill; ZEV = zero-emission vehicle

1.4 County Climate Action Framework

General Plan and 2020 CCAP

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

In 2015, the 2020 CCAP was adopted as a component of the Air Quality Element of the General Plan. It identified emissions related to community activities, established a 2020 GHG emissions reduction target consistent with AB 32, and established 26 local actions for reductions of GHG emissions. The 2020 CCAP was the first plan to set GHG emissions reduction goals in unincorporated Los Angeles County, providing a road map for implementing measures to reduce unincorporated Los Angeles County's GHG emissions. The 2020 CCAP addressed emissions from land use, transportation, building energy, water consumption, and waste generation.

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

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

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

OurCounty Sustainability Plan

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

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

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

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

1.5 County Leadership on Climate Action

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

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

1.6 Climate Equity

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

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

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

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

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

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

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

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

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

Climate Equity Guiding Principles

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

	Prioritize Frontline Communities Develop and implement strategies that identify, prioritize, and effectively support and create opportunities for the most disadvantaged geographies and vulnerable populations. Actively seek to remove barriers to investment and incorporate protections for people and communities.
	Authentically Engage Communities Authentically engage residents, organizations, and other community stakeholders to inform and determine implementation and investments. Include stakeholders in decisions that impact their lives.
	Use Equity-Centered Data and Analysis Use data to effectively assess and communicate equity needs and support timely assessment of progress. Understand the way that funding allocation requirements and formulas lead to disinvestment and reformulate to put frontline communities first.
	Work Collaboratively Work collaboratively and intentionally across departments as well as across leadership levels and decision-makers within the County, with other government agencies, and with external partners and community-based organizations.
	Achieve Results Act urgently and boldly to achieve tangible results. Create a cycle of feedback with communities through implementation to continually refine and improve.

Figure 1-2: Climate Equity Guiding Principles

Equity Approach

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

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

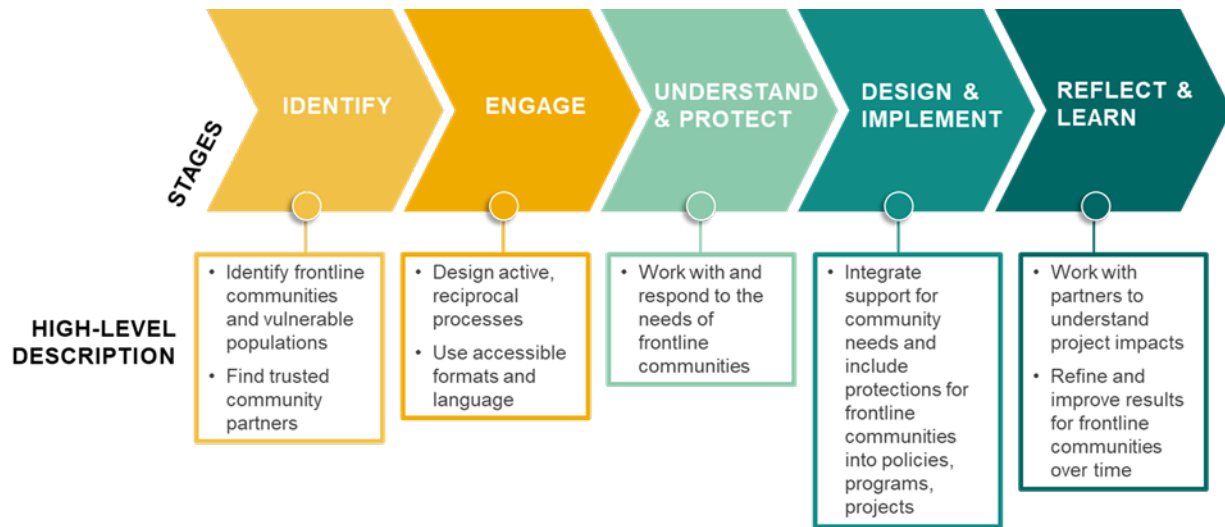


Figure 1-3: Integrating Equity into 2045 CAP Implementation

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

Identify Frontline Communities

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

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

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

Engage Communities and Build Capacity

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

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

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

Provide a Just Transition

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

The Los Angeles Just Transition Strategy report was developed with a task force that included frontline and tribal communities, industry representatives, labor organizations, and workforce development partners.⁹ The report includes goals, strategies, and actions to ensure a just transition for workers and communities affected by the phase-out of oil drilling and extraction activities.

Incorporate Anti-Displacement

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

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

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

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

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

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

reliant on a diminishing natural gas infrastructure. The County will look beyond exemptions and work with partners to design policies and programs that support frontline communities, protect tenants, and prioritize public subsidies to maintain housing affordability.

Include Rural and Remote Communities

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

Deliver Support to Frontline Communities

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

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

Develop a Monitoring and Reporting Mechanism

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

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

1.7 Energy Resilience

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

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

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

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

¹² Intergovernmental Panel on Climate Change. 2022. *Summary for Policy Makers*. Section B: Observed and Projected Impacts and Risks. Available: https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Summary_ForPolicymakers.pdf. Accessed February 2023.

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

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CHAPTER 2

GHG Emissions Inventory, Forecasts, and Reduction Targets

2.1 Community GHG Emissions Inventory

The 2015 GHG emissions inventory for unincorporated Los Angeles County forms the baseline inventory for the 2045 CAP. The year 2015 was selected as the emissions baseline for the 2045 CAP because of the availability in that year of the most recent, reliable, accurate, and complete emissions activity data that were available when the OurCounty Sustainability Plan was prepared. The 2015 GHG emissions inventory is compliant with the *Global Protocol for Community-Scale Greenhouse Gas Inventories*, which accounts for communitywide GHG emissions in line with 2006 Intergovernmental Panel on Climate Change guidelines for national GHG inventories. The inventory accounts for the CO₂ equivalence of seven gases: CO₂, methane, nitrous oxide, hydrofluorocarbons (HFCs), perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride. These emissions are organized into five sectors, based on the activity type or source:

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

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

The community-scale GHG emissions inventories for unincorporated Los Angeles County were developed using the *Global Protocol for Community-Scale Greenhouse Gas Inventories*.¹⁴ This protocol is used for calculating and reporting emissions from community activities and sources from seven gases: CO₂, methane, nitrous oxide, HFCs, perfluorocarbons, hexafluoride, and nitrogen trifluoride. The inventories include the following emissions:

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

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

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

In 2015, emissions generated by community activities occurring in unincorporated Los Angeles County amounted to 5.5 million metric tons CO₂ equivalent (MTCO₂e).¹⁷ The transportation and stationary energy sectors were the largest contributors to the inventory. The transportation sector accounts for approximately 2.8 million MTCO₂e (51 percent) of total GHG emissions, while the

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

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

¹⁶ Environmental Science Associates. 2022. *Positive Verification Opinion for Greenhouse Gas Emissions and Reductions for Emissions Year 2021*.

¹⁷ The 2015 GHG emissions inventory for the unincorporated Los Angeles County is adapted from the Countywide 2015 Community GHG Inventory prepared for the OurCounty Sustainability Plan. Per the OurCounty Sustainability Plan, 2015 emissions from unincorporated Los Angeles County amounted to 9.5 million MTCO₂e. The CAP accounts for emissions from all the sectors and subsectors reported in the OurCounty Sustainability Plan and includes additional community activities for unincorporated Los Angeles County (including off-road equipment, buses, and product use emissions, as detailed in Appendix A.1). However, due to updated activity data, emission factors, and modeling protocols, the 2045 CAP reports significantly lower emissions for 2015 (5.5 million MTCO₂e).

stationary energy sector accounts for approximately 1.9 million MTCO₂e (35 percent) of total GHG emissions. The transportation sector includes emissions from on-road passenger vehicles, trucks, and railways. The stationary energy sector includes emissions from residential, commercial, and institutional uses; industrial buildings; and stationary equipment. The remaining emissions sources include waste and wastewater (8 percent), refrigerants and other industrial products (5 percent), and other land-related activities including forestry and agriculture (1 percent).

To capture the latest emissions profile and emissions trends in Los Angeles County since 2015, the County prepared an updated inventory for the year 2018, given the availability in that year of the most recent complete data set of emissions-generating activity. The 2018 inventory relies on the same protocol and data sources that were used in the 2015 GHG emissions inventory. In 2018, communitywide emissions totaled nearly 5.2 million MTCO₂e. The transportation sector was the greatest contributor, accounting for 52 percent of emissions and 2.7 million MTCO₂e. The stationary energy sector was the second greatest contributor at 33 percent and 1.7 million MTCO₂e. The remaining emissions were generated by the waste (9 percent), IPPU (5 percent), and AFOLU (1 percent) sectors.

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

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

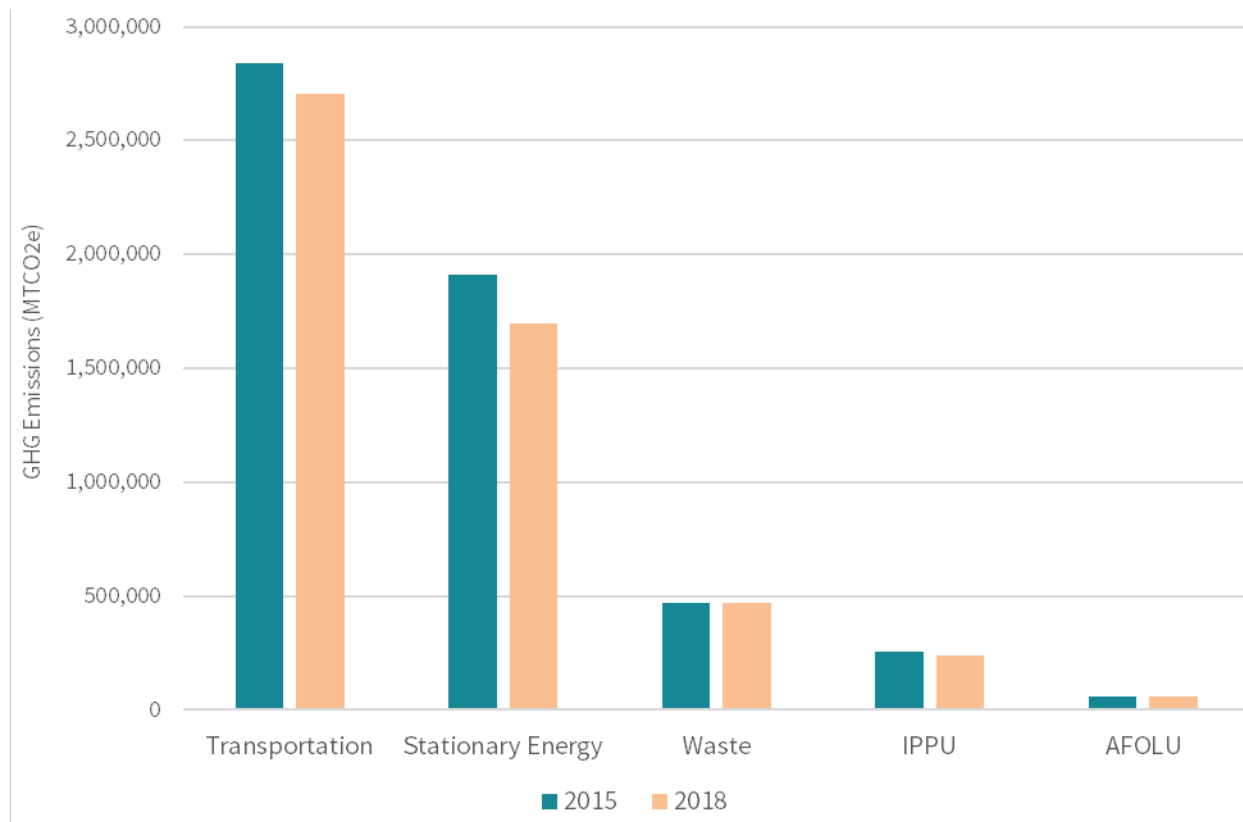


Figure 2-1: 2015 and 2018 Greenhouse Gas Emissions by Sector

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

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

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

Abbreviations: AFOLU = Agriculture, Forestry, and Other Land Use; CO₂ = carbon dioxide; GHG = greenhouse gas; IPPU = Industrial Processes and Product Use; MTCO₂e = metric tons of carbon dioxide equivalent

Note: Totals may not add precisely due to rounding.

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

2.2 Emissions Forecasts

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

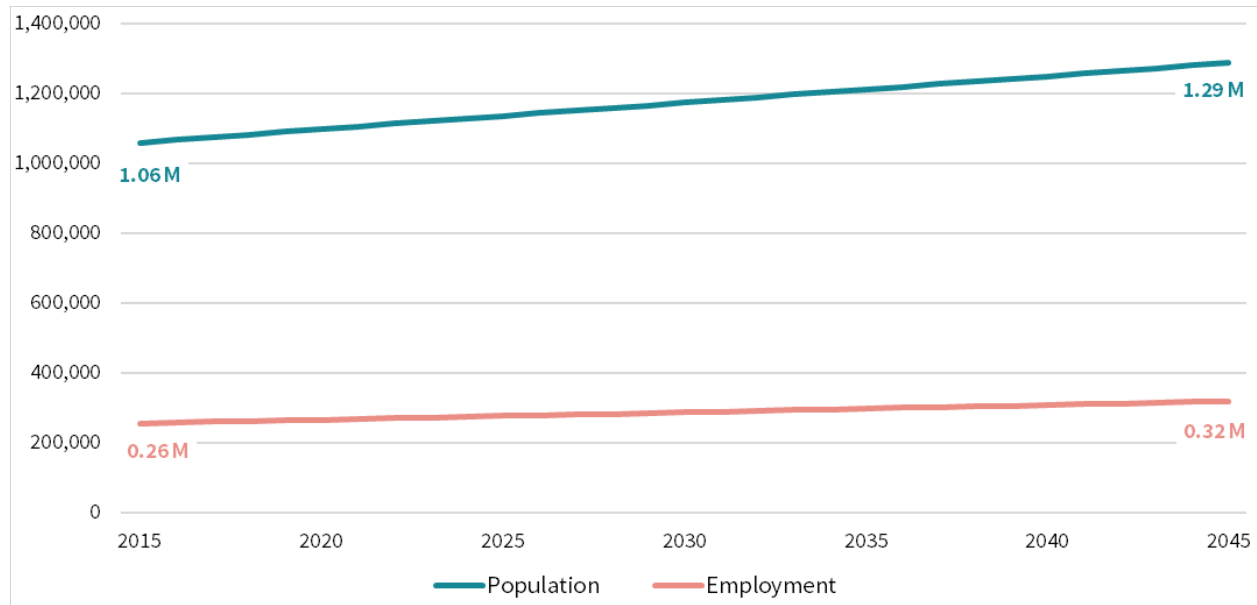


Figure 2-2: Population and Employment Growth in Unincorporated Los Angeles County¹⁹

Business-as-Usual Forecast

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

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

¹⁹ Southern California Association of Governments. 2016. *The 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy*. April 2016 model. Accessed by Fehr and Peers in July 2019.

²⁰ The General Plan uses the 2008 Regional Transportation Model.

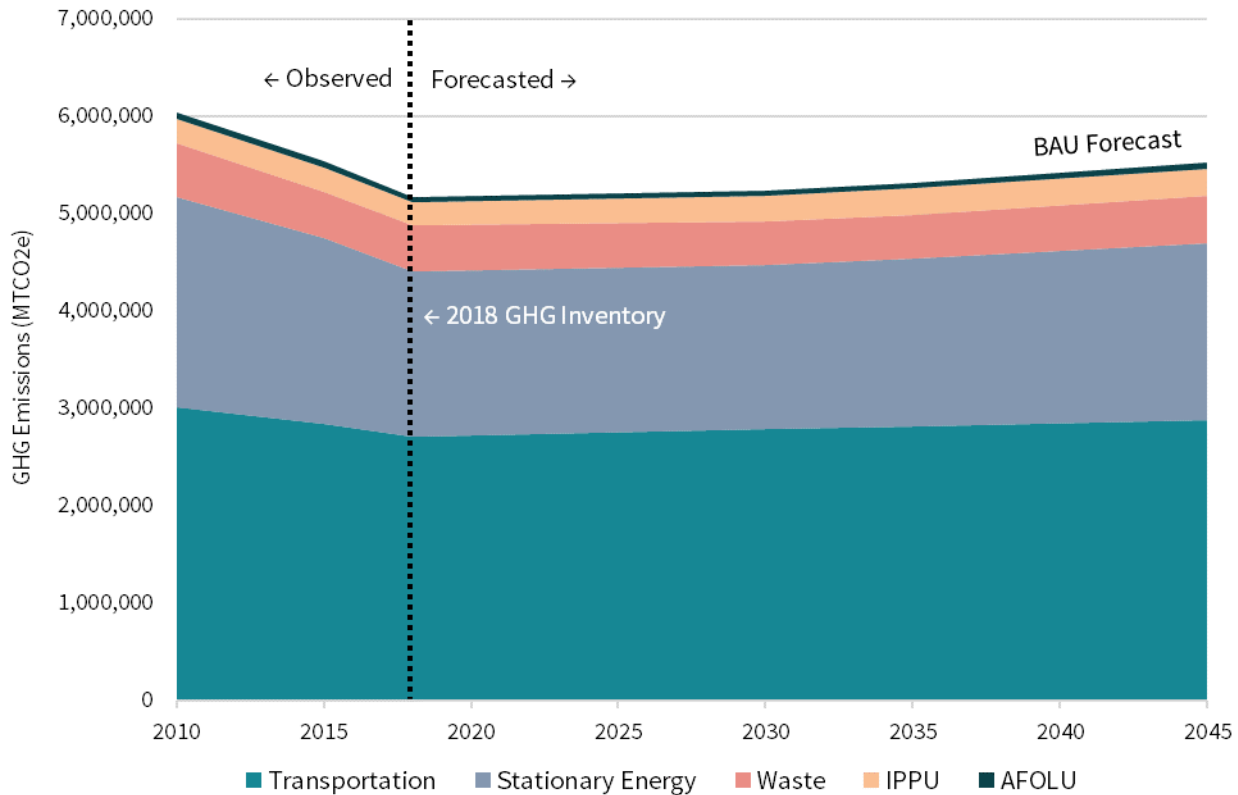


Figure 2-3: Forecast of 2045 Business-as-Usual Greenhouse Gas Emissions

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

Adjusted Business-as-Usual Forecast

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

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

Table 2-2 shows the projected total emissions for each target year under the Adjusted BAU forecast. Total emissions for unincorporated Los Angeles County are forecasted to decline from 5.5 million MTCO₂e in 2015 to 3.8 million MTCO₂e by 2045, a 31 percent reduction. The table

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

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

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

Abbreviations: AFOLU = Agriculture, Forestry, and Other Land Use; GHG = greenhouse gas; IPPU = Industrial Processes and Product Use; MTCO₂e = metric tons of carbon dioxide equivalent

Source: Appendix B: Emissions Forecasting and Reduction Methods.

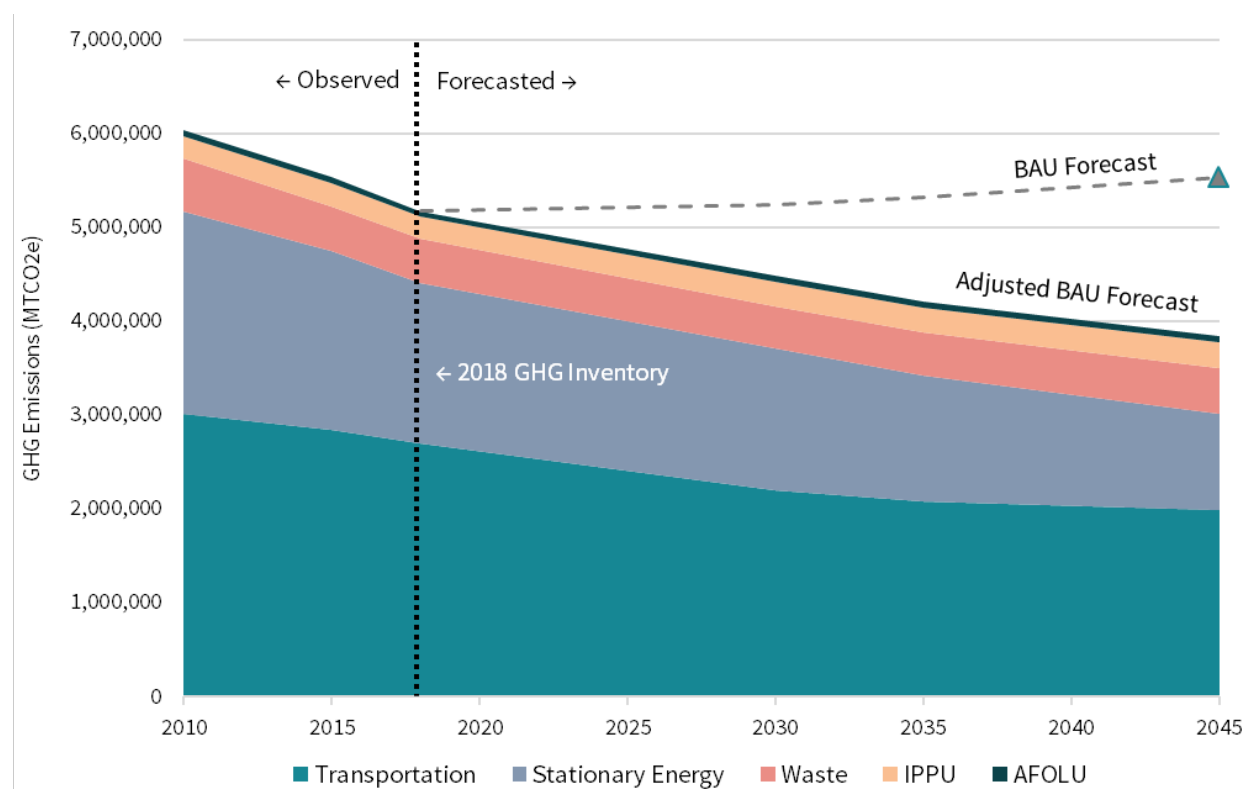


Figure 2-4: Forecast of 2045 Adjusted Business-as-Usual Greenhouse Gas Emissions

Source: Appendix B: Emissions Forecasting and Reduction Methods.

2.3 Emissions Targets

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

State Targets

AB 32 and SB 32:

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

AB 1279:

- By 2045, reduce statewide anthropogenic GHG emissions to at least 85 percent below 1990 levels.
- By 2045 or sooner, achieve net zero²¹ GHG emissions and achieve and maintain net negative GHG emissions thereafter.

SB 100 and SB 1020:

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

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

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

Regional Targets

SB 375/SCAG Regional Transportation Plan:

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

OurCounty Sustainability Plan

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

2045 CAP Targets and Carbon Neutrality Goal

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

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

2045 CAP Targets

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


2045 CAP Aspirational Goal

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

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

The 2030 target is consistent with the SB 32 target of a 40 percent reduction below 1990 levels. Total unincorporated Los Angeles County emissions in 1990 are estimated to be 6.4 million MTCO₂e. Because the 2015 emissions of 5.5 million MTCO₂e are 15 percent lower than the 1990 emissions, the 2030 target of a 40 percent reduction below 2015 levels is equivalent to a 48 percent reduction below 1990 levels. This exceeds the state target of 40 percent below 1990 levels by 2030. As such, the 2045 CAP's 2030 target is in line with (and actually more stringent than) the SB 32 target for the state. The 2045 target of 83 percent below 2015 levels (equivalent to 85 percent below 1990 levels) aligns with the State of California's 2045 target as codified in AB 1279 and evaluated in the Final 2022 Scoping Plan. In addition, the 2035 target of 50 percent below 2015 levels (equivalent to 57 percent below 1990 levels) puts unincorporated Los Angeles County on the trajectory to achieve 85 percent below 1990 levels by 2045, consistent with state targets. These concepts are illustrated in Figure 2-5 and **Figure 2-6**.

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



*A reduction of 40% below 2015 levels is equivalent to 48% below 1990 levels

[&]A reduction of 83% below 2015 levels is equivalent to 85% below 1990 levels

[#]The 2045 CAP has an *aspirational goal* of carbon neutrality by 2045

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

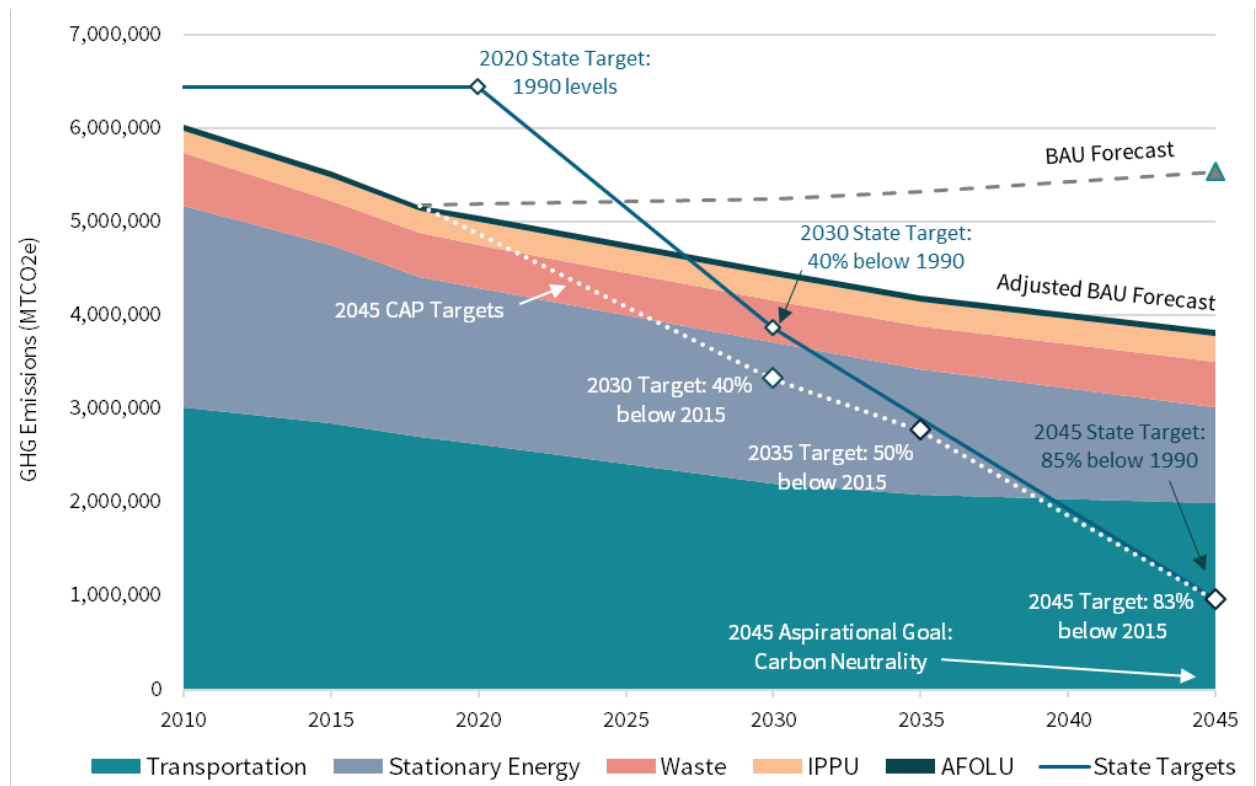


Figure 2-6: 2030, 2035, and 2045 Greenhouse Gas Emissions Targets and 2045 Aspirational Goal

Source: Appendix B: Emissions Forecasting and Reduction Methods.

CHAPTER 3

GHG Emissions Reduction Strategies, Measures, and Actions

3.1 GHG Emissions Reduction Framework

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



Energy Supply



Transportation



Building Energy
and Water



Waste



Agriculture,
Forestry, and
Other Land Uses

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

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

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

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

3.2 GHG Emissions Reduction Potential

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

Through locally implemented strategies and measures, described in more detail in the following sections, annual emissions reductions for unincorporated Los Angeles County are anticipated to be 1,580,723 MTCO₂e by the year 2030 (**Table 3-1**). Combined with state and regional measures, local measures will enable unincorporated Los Angeles County to reduce total community GHG emissions to approximately 2,899,852 MTCO₂e in the year 2030 (**Table 3-2**). This reduction of approximately 48 percent from 2015 levels would enable unincorporated Los Angeles County to exceed its 2030 target. Also shown in these tables, annual emissions reductions for unincorporated Los Angeles County are anticipated to be 2,033,420 MTCO₂e in the year 2035 and 2,988,956 MTCO₂e in the year 2045—61 percent below 2015 levels in 2035 and 85 percent below 2015 levels in 2045—exceeding the targets for both years. These measures would also put unincorporated Los Angeles County on a path toward attaining carbon neutrality by 2045.

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

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

Abbreviation: MTCO₂e/year = metric tons of carbon dioxide equivalent per year

Note: Totals may not add precisely due to rounding.

Source: Appendix B: Emissions Forecasting and Reduction Methods.

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

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

Abbreviations: 2045 CAP = 2045 Los Angeles County Climate Action Plan; MTCO₂e/year = metric tons of carbon dioxide equivalent per year

Note: Totals may not add precisely due to rounding.

Source: Appendix B: Emissions Forecasting and Reduction Methods.

Figure 3-1 depicts unincorporated Los Angeles County's GHG emissions reduction pathway for meeting its targets through 2045 and making substantial progress toward the long-term aspirational goal of carbon neutrality by 2045. To achieve that long-term aspirational goal, additional state and local measures will be needed, potentially including carbon offsets. The figure illustrates that approximately 850,000 MTCO₂e in residual emissions will need to be eliminated or offset to meet the 2045 carbon-neutral aspirational goal.

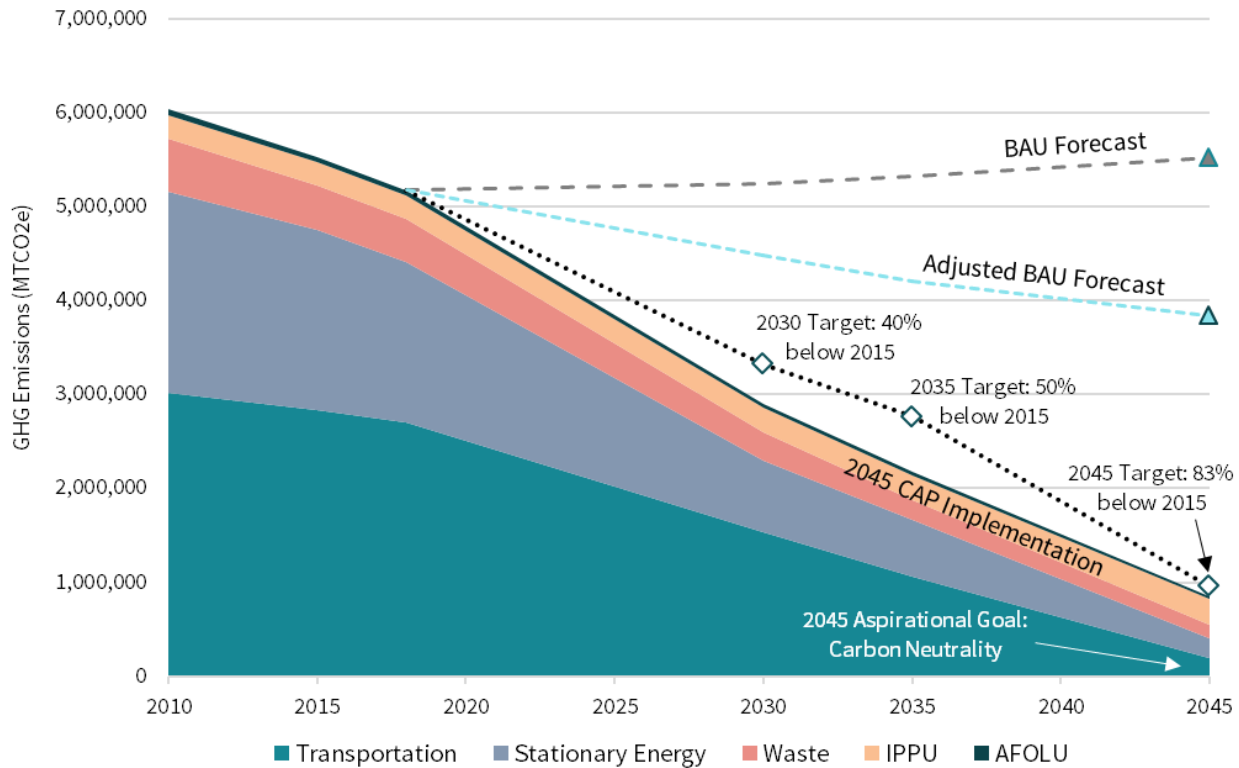


Figure 3-1: Communitywide Greenhouse Gas Emissions Forecasts with 2045 Climate Action Plan Implementation

Source: Appendix B: Emissions Forecasting and Reduction Methods.

Core Measures

The 2045 CAP includes 25 measures and more than 90 implementing actions, and achieving the GHG emissions targets for 2030, 2035, and 2045 described in Chapter 2 can be accomplished by successfully reaching the performance objectives of the core measures and other quantified and supporting measures. While the core measures provide the highest GHG emissions reduction potential, the implementation of other non-core measures provides the County a more comprehensive approach to emissions reductions.

Based on the GHG emissions reduction estimates provided in Chapter 3, **Figure 3-2** shows how five core measures out of the 18 quantified measures contribute almost 90 percent of the total reductions expected by 2030. Unincorporated Los Angeles County can meet its targets for 2030 and 2035 solely through implementation of these five core measures²²:

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

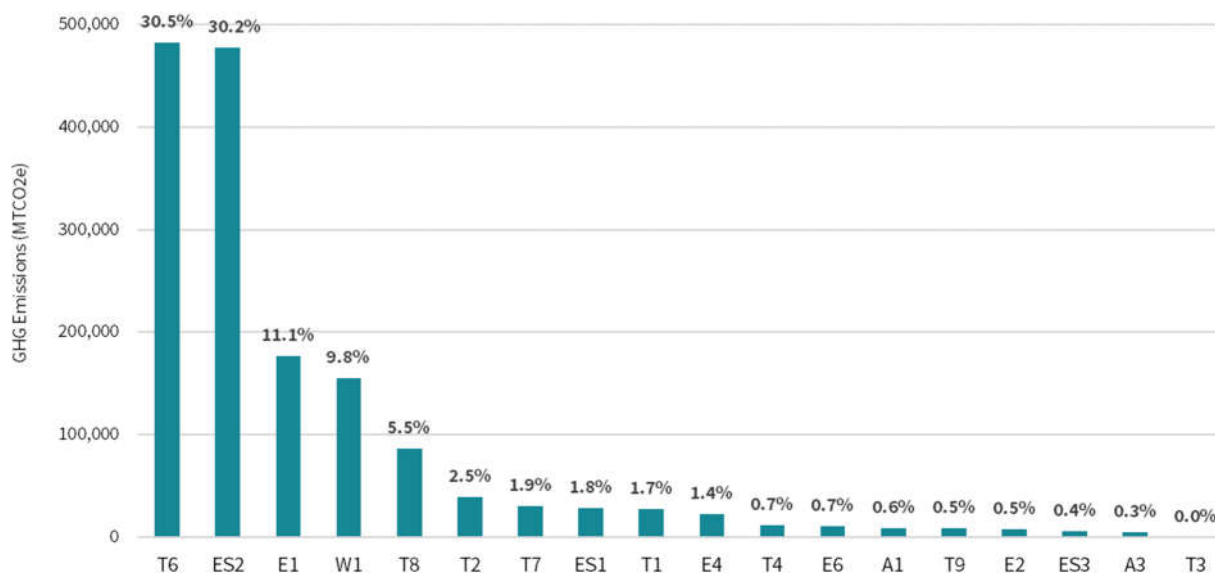


Figure 3-2: Greenhouse Gas Emissions Reduction Measures, Ranked by 2030 Reduction Potential

Source: Appendix B: Emissions Forecasting and Reduction Methods.

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

²² Achieving the performance objectives for these five measures should cause unincorporated Los Angeles County to exceed the 2030 target by more than 160,000 MTCO₂e and the 2035 target by more than 230,000 MTCO₂e.

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

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES
T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales	<p>Increase the fleetwide percentage of light-duty vehicles in unincorporated Los Angeles County that are ZEVs to 30% by 2030; 50% by 2035; and 90% by 2045.</p> <p>Increase the sales of new light-duty vehicles in unincorporated Los Angeles County that are ZEVs to 68% by 2030 and 100% by 2035.</p> <p>Install new public and private shared electric vehicle charging stations (EVCS): 37,000 by 2030; 74,000 by 2035; and 140,000 by 2045.</p> <p>Install new EVCSs at County facilities and properties: 5,000 by 2030; 10,000 by 2035; and 25,000 by 2045.</p>	CSO ISD DRP PW	Fire LASD Parks Beaches and Harbors SCE	<ul style="list-style-type: none"> • SCE Charge Ready Program • SCAQMD and MSRC Residential EV Charging Incentive Pilot Program • SCAQMD Alternative Fuel Vehicle and Fueling Infrastructure Grants • SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant • SCAQMD Goods Movement Emission Reduction Program • CARB Clean Fuel Reward and CALeVIP • CARB Clean Mobility Options Voucher Pilot Program • CARB Low Carbon Transportation Investments and Air Quality Improvement Program • CARB Bus Replacement Grant • CARB Hybrid and Zero Emission Truck and Bus Voucher Incentive Project • CARB Greenhouse Gas Reduction Fund • CPUC Transportation Electrification Program • CEC CALeVIP and EVSE Rebates • CEC Clean Transportation Program • CalCAP EV Charging Station Financing Program for small businesses • Federal Inflation Reduction Act EV tax credits and other financial incentives • Federal EV Charging Tax Credit • Federal Zero-Emission Transit Bus Tax Exemption

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

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES
ES2: Procure Zero-Carbon Electricity	Participate in CPA's Green Power option, SCE's Green Rate option, or other available 100% zero-carbon electricity service: 100% municipal participation by 2025 and 96% community participation by 2030.	ISD CSO	CPA SCE LA100	<ul style="list-style-type: none"> • CPA Powershare program • Federal Inflation Reduction Act • CARB Greenhouse Gas Reduction Fund • CARB California Climate Investments program • CPUC California Solar Initiative • CPUC Self-Generation Incentive Program • Low-Income Solar and Wind Investment Tax Credit • U.S. DOE Renewable Energy and Efficiency Energy grants
E1: Decarbonize Existing Buildings	<p>Decarbonize the existing residential building stock: 25% by 2030; 40% by 2035; and 80% by 2045.</p> <p>Decarbonize the existing nonresidential building stock: 15% by 2030; 25% by 2035; and 60% by 2045.</p> <p>Require major renovations to be electric-ready.</p> <p>Require ZNE for all major renovations: 50% by 2030; 75% by 2035; and 100% by 2045.</p> <p>Adopt building performance standards and reach code(s).</p> <p>Adopt ZNE ordinance.</p>	DRP PW ISD CSO	SCE SoCalGas CPA RePowerLA Coalition NRDC	<ul style="list-style-type: none"> • CPUC Technology and Equipment for Clean Heating and Building Initiative for Low Emissions Development programs • CARB Greenhouse Gas Reduction Fund • CARB California Climate Investments program • California Alternative Energy and Advanced Transportation Financing Authority • California Lending for Energy and Environmental Needs Center • Affordable Housing and Sustainable Communities Program • CPUC Energy Saving Assistance Program • CPA and CALeVIP rebates • Federal Inflation Reduction Act • Home Electrification and Energy Efficiency Rebates • Efficient Building Code Adoption Grants • County General Fund

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

MEASURE	PERFORMANCE GOALS	LEAD	PARTNERS	POTENTIAL FUNDING SOURCES
W1: Institutionalize Sustainable Waste Systems and Practices	<p>Increase the total unincorporated Los Angeles County waste diversion rate to 85% by 2030; 90% by 2035; and 95% by 2045.</p> <p>Reduce the disposal of single-use plastics in landfills.</p> <p>Increase Construction and Demolition Ordinance to 70% diversion.</p> <p>Increase percentage of construction and demolition debris reused in new projects (private, public).</p>	PW CSO	DRP DPH LACSD CalRecycle	<ul style="list-style-type: none"> • CalRecycle grants • CEC grants • USDA Water & Waste Disposal Loan & Grant Program
T8: Accelerate Freight Decarbonization	<p>Increase the fleetwide percentage of medium- and heavy-duty vehicles in unincorporated Los Angeles County that are ZEVs to 40% by 2030; 60% by 2035; and 90% by 2045.</p> <p>Increase the fleetwide percentage of medium- and heavy-duty vehicles in the County-owned fleet that are ZEVs to 50% by 2030; 70% by 2035; and 95% by 2045.</p> <p>Ensure that 100 percent of the drayage truck fleet is ZEV by 2035.</p> <p>Ensure that 100 percent of sales of medium- and heavy-duty trucks are ZEV by 2045.</p> <p>All new warehouse loading docks must have EVCs by 2030.</p> <p>All existing warehouse loading docks must have EVCs by 2030.</p>	PW DRP CSO ISD LASD Fire Parks	SCAQMD CARB SCAG Metro Councils of governments Cities	<ul style="list-style-type: none"> • SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant • SCAQMD Goods Movement Emission Reduction Program • CEC CALeVIP EVSE Rebates • SCE Charge Ready Program EVSE rebates • CARB Advanced Technology Freight Demonstration Projects • CARB Low Carbon Transportation Investments and Air Quality Improvement Program • CARB Clean Vehicle Rebate Project (CVRP) public fleet vehicle rebates • CEC Clean Transportation Program • CPUC statewide transportation electrification infrastructure rebate program • County General Fund Federal Inflation Reduction Act EV tax credits and other financial incentives • Federal New EV Tax Credit • Federal EV Charging Tax Credit • Federal Commercial EV Tax Credit

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

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

Source: Appendix B: Emissions Forecasting and Reduction Methods.

Costs and Savings

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

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

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

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

The Path to Carbon Neutrality

AB 1279 mandates that by 2045, the State of California must achieve net zero GHG emissions and reduce anthropogenic GHG emissions to 85 percent below 1990 levels. In December 2022, CARB adopted the 2022 Scoping Plan, which lays out the sector-by-sector road map for California to achieve carbon neutrality by 2045 or earlier. The 2045 CAP aligns with AB 1279 and the 2022 Scoping Plan through its 2045 **target** of reducing unincorporated Los Angeles County's emissions to 85 percent below 1990 levels and its **aspirational goal** of carbon neutrality by 2045. As defined by AB 1279, CARB, and the 2045 CAP, carbon neutrality and net zero GHG emissions are equivalent, and mean that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of CO₂ that is stored, both in natural sinks and through mechanical sequestration.²⁵ To achieve carbon neutrality, the County must leverage its influence as a climate leader, collaborating with other local jurisdictions as well as the private, institutional, and nonprofit sectors. Recognizing that no single entity has direct control over communitywide GHG emissions, a collaborative approach is essential to realize equitable and sustainable climate actions for a carbon neutral Los Angeles County.

The 2045 CAP provides a road map for successfully achieving both the 2030 and 2035 targets by a substantial margin along with the 2045 target. The 2045 CAP places unincorporated Los Angeles County on a trend that aims for carbon neutrality by 2045. However, as illustrated in Figure 3-1, successful implementation of the 2045 CAP alone will not be enough for unincorporated Los Angeles County to achieve this aspirational goal of carbon neutrality. As indicated in Table 3-2, even with CAP implementation, there will still be approximately 850,000 MTCO₂e of residual emissions in 2045. These emissions will originate from buildings and energy industries that can reduce but cannot eliminate emissions from natural gas use (approximately 170,000 MTCO₂e), use of light-duty vehicles and heavy-duty trucks (approximately 190,000 MTCO₂e), fluorinated products/product use (approximately 285,000 MTCO₂e), solid waste disposal (approximately 86,000 MTCO₂e), wastewater treatment (approximately 73,000 MTCO₂e), miscellaneous other sources (approximately 32,000 MTCO₂e), off-road equipment use (approximately 27,000 MTCO₂e), and fertilizer use (approximately 24,000 MTCO₂e).

Figure 3-3 depicts unincorporated Los Angeles County's residual GHG emissions in 2045 with implementation of the 2045 CAP for each major sector. Total residual emissions are approximately 850,000 MTCO₂e.

²⁵ California Health and Safety Code Section 38562.2.

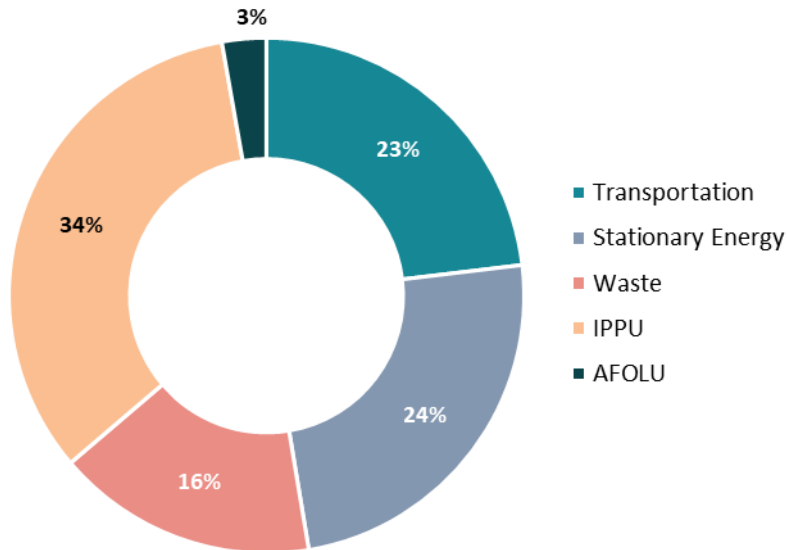


Figure 3-3: Residual 2045 Communitywide Greenhouse Gas Emissions with 2045 Climate Action Plan Implementation

Source: Appendix B: Emissions Forecasting and Reduction Methods.

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

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

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

If the residual emissions, shown in Figure 3-1, cannot be eliminated through new regulations or technologies, the County will consider future implementation of carbon removal strategies (such as carbon capture and sequestration and direct air capture), along with future implementation of a carbon offsets/credits program, following completion of a feasibility study, to achieve carbon neutrality by 2045. Evolving state regulations, programs, and financial incentives will provide new opportunities for unincorporated Los Angeles County to counteract any residual emissions. For example, almost \$9 billion in carbon capture and sequestration support was included in the \$1 trillion Infrastructure Investment and Jobs Act of 2021, which includes funding to establish four direct air capture hubs. As another example, SB 27 of 2021 will provide carbon removal projects via an in-state project registry, which will serve as a database of projects in the state that drive climate action on natural and working lands. Further, SB 905 of 2022 requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate carbon capture, utilization, or storage (CCUS) and CO₂ removal projects and technology; these projects could also support unincorporated Los Angeles County's aspirations to achieve carbon neutrality.

Alignment with the 2022 Scoping Plan

The 2022 Scoping Plan, adopted by CARB in December 2022, expands on prior scoping plans. This plan responds to more recent legislation, outlining a technologically feasible, cost-effective, and equity-focused path to achieve the state's climate target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045 and achieving carbon neutrality²⁷ by 2045 or earlier.²⁸ The 2022 Scoping Plan outlines the strategies the state will implement to achieve carbon neutrality by reducing GHG emissions to meet the anthropogenic target, and by expanding actions to capture and store carbon through the state's natural and working lands and using a variety of mechanical approaches.

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

²⁷ *Carbon neutrality* means "net zero" emissions of GHGs. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of CO₂ that is stored, both in natural sinks and through mechanical sequestration. AB 1279 uses the terminology "net zero" and the 2022 Scoping Plan uses the terminology "carbon neutrality" or "carbon neutral." For purposes of this 2045 CAP, these terms mean the same thing and are used interchangeably.

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

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

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

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

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

3.3 Strategies, Measures, and Actions

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

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

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

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

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



Energy Supply (ES)

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

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

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

Strategy 1: Decarbonize the Energy Supply

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

**Energy Supply****Strategy 1: Decarbonize the Energy Supply****2045 VISION****Phase out oil and gas extraction and provide building energy needs without using fossil fuels****Strategy Description**

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

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

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

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

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

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

According to CPA's 2022 Integrated Resource Plan (a CPUC proceeding to evaluate long-term grid resource needs), the projected 2030 renewable electricity mix is approximately 23 percent utility-scale solar, 53 percent battery storage, 21 percent onshore wind, and 2 percent hydro; the projected 2035 renewable electricity mix is 30 percent utility-scale solar, 45 percent battery storage, 24 percent onshore wind, and 1 percent hydro.³¹ This demonstrates that utility-scale solar is a relatively small portion of CPA's renewable energy supply mix through 2035. In addition, because of the large number of 100 percent Green Power customers, CPA expects to meet and exceed the State of California's 30 million MTCO₂e GHG targets, even in its lowest renewables case. Note that these projections do not include behind-the-meter distributed energy generation like rooftop solar because DER electricity generation is not supplied by CPA.

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

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

Past and Current County Actions

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

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

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

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

Alignment with State Initiatives

- SB 1137: Prohibits the development of new oil and gas wells or infrastructure in health protection zones, as defined, except for purposes of public health and safety or other limited exceptions.
- SB 100: By 2045, 100 percent of electricity is sourced from zero-carbon resources.
- SB 1020: Adds interim renewable energy and zero-carbon energy retail sales of electricity targets to California end-use customers set at 90 percent in 2035 and 95 percent in 2040; accelerates the timeline required to have 100 percent renewable energy and zero-carbon energy procured to serve state agencies from the original target year of 2045 to 2035.
- SB 1075: Requires CARB, by June 1, 2024, to prepare an evaluation that includes policy recommendations regarding the deployment, development, and use of hydrogen, and specifically the use of green hydrogen, in California.
- California Energy Efficiency Strategic Plan: A roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive Plan is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
- California Green Building Standards Code (CALGreen Code) (Title 24 Building Code): The CALGreen Code establishes mandatory measures for new residential and nonresidential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality.
- Renewables Portfolio Standard: A statewide mandate to increase the proportion of electricity from renewable sources. The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities (see SB 100 and SB 1020 above).
- SB 905 of 2002: Requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CCUS and CO₂ removal projects and technology.



Energy Supply

Strategy 1: Decarbonize the Energy Supply

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

Annual GHG Emissions

REDUCTIONS

By 2030: 28,368

By 2035: 40,178

By 2045: 52,148

(units = MTCO₂e)

Estimated COST

\$—\$\$\$\$

PERFORMANCE OBJECTIVES*

Reduce oil and gas operations compared to 2015 levels by:

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

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

Conduct carbon removal feasibility study.

** The performance objectives provided here serve as a general metric and may be refined upon completion of the Oil Well Amortization Study.*

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

ES1.2—Develop a policy that requires the examination of idle and abandoned oil wells for fugitive emissions of GHGs to develop and implement a closure plan. Coordinate with federal and state agencies collecting fugitive emissions data.

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



Energy Supply

Strategy 1: Decarbonize the Energy Supply

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

Annual GHG Emissions REDUCTIONS

By 2030: 477,188

By 2035: 317,915

By 2045: 0*

(units = MTCO₂e)

Estimated COST

\$—\$\$

PERFORMANCE OBJECTIVES

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

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

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

DESCRIPTION

Supplying unincorporated Los Angeles County's power demand with zero-carbon electricity³³ is critical to achieving significant GHG emissions reductions. The Clean Power Alliance (CPA) is a nonprofit and community choice energy provider that currently serves 32 communities across Southern California.

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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



Energy Supply

Strategy 1: Decarbonize the Energy Supply

MEASURE ES3: Increase Renewable Energy Production ^Q

Annual GHG Emissions REDUCTIONS*

By 2030: 5,919

By 2035: 5,219

By 2045: 0[#](units = MTCO₂e)

Estimated COST

\$-\$\$\$

PERFORMANCE OBJECTIVES

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

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

Install rooftop solar PV on all existing commercial buildings:

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

Install rooftop solar PV on all new multifamily residential buildings:

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

Install rooftop solar PV on all new commercial buildings:

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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

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

**Energy Supply****Strategy 1: Decarbonize the Energy Supply**

MEASURE ES3: Increase Renewable Energy Production ^Q

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

Install rooftop solar PV at all affordable housing developments.

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

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



Energy Supply

Strategy 1: Decarbonize the Energy Supply

MEASURE ES4: Increase Energy Resilience

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

\$—\$\$\$

PERFORMANCE OBJECTIVES

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

ES4.1—Develop a program to deploy community resilience hubs³⁴ at scale.

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

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

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

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

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



Energy Supply

Strategy 1: Decarbonize the Energy Supply

MEASURE ES5: Establish GHG Requirements for New Development

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

\$–\$\$

PERFORMANCE OBJECTIVES

- All new development that does not require a General Plan amendment and opts to use CEQA streamlining for GHG impacts shall be consistent with the 2045 CAP.
- Develop reach codes, ordinances, and conditions of approval as needed.

DESCRIPTION

Develop and implement requirements for new projects choosing to streamline their GHG impacts analysis under CEQA to ensure that such new development is consistent with the 2045 CAP milestone targets for 2030, 2035, and 2045. These requirements include applicant completion of a 2045 CAP CEQA streamlining checklist for non-CEQA-exempt new development requiring discretionary approvals to demonstrate consistency with the 2045 CAP and thereby streamline environmental review of their GHG impacts using the 2045 CAP's PEIR pursuant to CEQA Guidelines Section 15183.5(b).

To demonstrate compliance with the 2045 CAP CEQA streamlining requirements, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emission reduction measures. The project review checklist will be used for projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for streamlined project-specific CEQA GHG analysis.

In addition, the County will assess the feasibility of developing a GHG offsets/credit program to create a pathway toward achieving the aspirational 2045 goal of carbon neutrality. For more information, see Chapter 4, *Implementation and Monitoring*.

**Energy Supply****Strategy 1: Decarbonize the Energy Supply**

MEASURE ES5: Establish GHG Requirements for New Development**IMPLEMENTING ACTIONS**

For tracking metrics and implementation details, see Appendix E.

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

ES5.2—Implement the 2045 CAP CEQA streamlining checklist for new development to demonstrate consistency with the 2045 CAP's strategies, measures, and actions for purposes of streamlining environmental review of GHG impacts using the 2045 CAP's PEIR pursuant to CEQA Guidelines Section 15183.5(b).

ES5.3—Establish an Offsite GHG Reduction Program for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment.

³⁵ A *reach code* is a local building energy code that “reaches” beyond the state’s minimum requirements for energy use in building design and construction.



Transportation (T)

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

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

Transportation (T) comprises the following strategies and measures:

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

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

Strategy 3: Reduce Single-Occupancy Vehicle Trips

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

Strategy 4: Institutionalize Low-Carbon Transportation

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

**Transportation****Strategy 2: Increase Densities and Diversity of Land Uses Near Transit****2045 VISION**

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

Strategy Description

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

Past and Current County Actions

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

Alignment with State and Regional Initiatives

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



Transportation

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

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

Annual GHG Emissions

REDUCTIONS

By 2030: 27,357

By 2035: 26,019

By 2045: 25,276

(units = MTCO_{2e})

Estimated COST

\$–\$\$

PERFORMANCE OBJECTIVES

Increase in residential density:

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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



Transportation

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

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

Annual GHG Emissions REDUCTIONS

By 2030: 39,184

By 2035: 37,267

By 2045: 36,204

(units = MTCO_{2e})

Estimated COST

\$\$

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

PERFORMANCE OBJECTIVES

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

**Transportation****Strategy 3: Reduce Single-Occupancy Vehicle Trips****2045 VISION****A proliferation of travel options that do not require personal vehicle ownership****Strategy Description**

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

Past and Current County Actions

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

Alignment with State and Regional Initiatives

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



Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

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

Annual GHG Emissions

REDUCTIONS

By 2030: 0

By 2035: 2,811

By 2045: 2,730

(units = MTCO_{2e})

Estimated COST

\$\$\$-\$\$\$\$\$

PERFORMANCE OBJECTIVES

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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



Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

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

Annual GHG Emissions

REDUCTIONS

By 2030: 11,465

By 2035: 10,904

By 2045: 10,593

(units = MTCO_{2e})

Estimated COST

\$-\$\$\$\$\$

PERFORMANCE OBJECTIVES

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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

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

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

**Transportation****Strategy 3: Reduce Single-Occupancy Vehicle Trips**

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

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

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

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

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



Transportation

Strategy 3: Reduce Single-Occupancy Vehicle Trips

MEASURE T5: Limit and Remove Parking Minimums

Annual GHG Emissions

REDUCTIONS

Not quantified (supporting measure)

Estimated COST

\$\$-\$\$\$

PERFORMANCE OBJECTIVES

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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



Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

2045 VISION

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

Strategy Description

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

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

Past and Current County Actions

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

Alignment with State Initiatives

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



Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

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

Annual GHG Emissions

REDUCTIONS

By 2030: 482,515

By 2035: 820,125

By 2045: 1,535,101

(units = MTCO_{2e})

Estimated COST

\$-\$\$\$

PERFORMANCE OBJECTIVES

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

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

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

- 68 percent by 2030
- 100 percent by 2035

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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



Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

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

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

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

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

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



Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T7: Electrify County Fleet Vehicles ^{Q M}

Annual GHG Emissions REDUCTIONS

By 2030: 29,743

By 2035: 24,335

By 2045: 10,119

(units = MTCO_{2e})

Estimated COST

\$\$\$—\$\$\$\$

PERFORMANCE OBJECTIVES

Electrify the County bus and shuttle vehicle fleets by 2035.

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

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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



Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T8: Accelerate Freight Decarbonization (Core) ^Q

Annual GHG Emissions

REDUCTIONS

By 2030: 86,168

By 2035: 103,528

By 2045: 176,638

(units = MTCO_{2e})

Estimated COST

\$-\$\$\$\$

PERFORMANCE OBJECTIVES

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

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

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

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

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

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

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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



Transportation

Strategy 4: Institutionalize Low-Carbon Transportation

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

Annual GHG Emissions

REDUCTIONS

By 2030: 8,373

By 2035: 21,819

By 2045: 44,964

(units = MTCO₂e)

GHG BENEFIT-COST RATIO

\$—\$\$

PERFORMANCE OBJECTIVES

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

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

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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



Building Energy and Water (E)

Buildings are central in the County’s approach to reducing GHG emissions associated with energy supply and consumption. This category includes a range of strategies aimed at reducing energy use in buildings, decarbonizing the energy and materials used in buildings, and reducing water consumption. The approach combines increasing energy efficiency, electrifying buildings, replacing fossil fuels with carbon-free and renewable fuel sources, and decarbonizing building materials.³⁷

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

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

The Los Angeles County Sanitation Districts (LACSD) provides affordable, high-quality recycled water to public and private water suppliers to help meet the water supply needs for more than five

³⁷ In *California Restaurant Association v. City of Berkeley*, No. 21-16278, the Ninth Circuit Court of Appeals found Berkeley’s natural gas ban preempted by the federal Energy Policy and Conservation Act (EPCA). Despite the court’s broad statements, the CRA decision only addressed a single type of approach to building electrification: a non-building code prohibition on gas infrastructure in new construction (Berkeley’s ordinance leveraged “police powers” to amend the City’s Health and Safety Code). The CRA decision did not address other approaches used by local governments in the Ninth Circuit such as air quality standards that regulate air pollutant emissions from appliances, reach codes that encourage all-electric construction (for example, the California Green Building Standards Code—Part 11, Title 24, California Code of Regulations), and policies that require reductions in GHG emissions or air pollution from new construction that provide for flexibility for achieving such requirements. On May 31, 2023, Berkeley’s City Attorney filed a petition for an “en banc” rehearing with the full 11-judge panel on the U.S. Court of Appeals for the Ninth Circuit. The Biden Administration filed an Amicus Brief in support of the City of Berkeley’s ordinance, stating that the panel’s opinion is flawed by wrongly interpreted the preemption provision of EPCA. It is not known how the final ruling will impact various local government approaches to electrification, including all-electric building code amendments and air emissions standards. Building performance standards (BPS) are being developed in response to the ruling, such as air emission standards for buildings similar to the state of New York’s Local Law 97. Performance standards such as this are anticipated to achieve similar GHG reduction results as building electrification without restricting fuel type.

million people within the Sanitation Districts' service area. The recycled water is beneficially reused for industrial, commercial, and recreational applications; groundwater replenishment; agriculture; and the irrigation of parks, schools, golf courses, roadways, and nurseries.

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

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

Strategy 5: Decarbonize Buildings

- Measure E1: Decarbonize Existing Buildings ^Q
- Measure E2: Decarbonize New Development ^Q
- Measure E3: Other Decarbonization Actions

Strategy 6: Improve Efficiency of Existing Building Energy Use

- Measure E4: Improve Energy Efficiency of Existing Buildings ^Q

Strategy 7: Conserve Water

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

What is Building Decarbonization?

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

Building emissions come from:

DIRECT SOURCES:

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

INDIRECT SOURCES:

- Generation of the electricity used in buildings.

Ways to decarbonize buildings:

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



Building Energy and Water

Strategy 5: Decarbonize Buildings

2045 VISION

Zero use of fossil fuels to provide building energy needs

Strategy Description

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

Past and Current County Actions

- In 2017, LACSD partnered with the Metropolitan Water District of Southern California to explore the potential of a water purification project called Pure Water Southern California (formerly known as the Regional Recycled Water Program) at the Joint Water Pollution Control Plant, located in the City of Carson. At project completion, up to 150 million gallons per day (mgd) of water would be produced to recharge various regional groundwater basins and/or supplement regional water supply sources. The NOP for the project was published in September 2022.
- In 2019, the County adopted the 2020 County of Los Angeles Green Building Standards Code.
- In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that facilitate construction and maintenance of quality housing to enhance livability of neighborhoods.
- In February 2022, the County Board of Supervisors passed a motion to study the feasibility of establishing ZNE standards for major development projects and other large-scale development.
- In March 2022, the Board of Supervisors passed a motion to ensure the equitable decarbonization of buildings through a stakeholder engagement process, studying energy resource and infrastructure needs, and by seeking funding. The motion also directs PW, the Chief Sustainability Office, DRP, and other County departments to provide recommendations for an ordinance or building code changes that would phase out the use of natural gas equipment and appliances in all new residential and commercial construction and substantial renovations, where feasible, starting in 2023.

Alignment with State Initiatives

- **California Energy Efficiency Strategic Plan:** A roadmap to achieve maximum energy savings across all major groups and sectors in California. This comprehensive Plan is the state's first integrated framework of goals and strategies for saving energy, covering government, utility, and private sector actions, and holds energy efficiency to its role as the highest priority resource in meeting California's energy needs.
- **CALGreen Code (Title 24 Building Code):** The CALGreen Code establishes mandatory measures for new residential and nonresidential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality.
- **Renewables Portfolio Standard (SB 100 and SB 1020):** A statewide mandate to increase the proportion of electricity from renewable sources. The program sets continuously escalating renewable energy procurement requirements for the state's load-serving entities. Generation must be procured from RPS-certified facilities.
- **SB 1206:** Mandates a stepped sales prohibition on newly produced high-GWP HFCs to transition California's economy toward recycled and reclaimed HFCs for servicing existing HFC-based equipment.



Building Energy and Water Strategy 5: Decarbonize Buildings

MEASURE E1: Decarbonize Existing Buildings (Core) ^Q

Annual GHG Emissions REDUCTIONS

By 2030: 176,072

By 2035: 280,988

By 2045: 477,221

(units = MTCO_{2e})

Estimated COST

\$\$\$\$

PERFORMANCE OBJECTIVES*

Decarbonize the existing residential building stock:

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

Decarbonize the existing nonresidential building stock:

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

Require Zero Net Energy (ZNE)³⁸ for all major renovations:

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E1.1—Adopt Building Performance Standards for existing buildings and reach code requirements for major retrofits and renovations that require zero-GHG emission appliances.

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

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

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

³⁸ *Zero net energy* is defined by the U.S. Department of Energy as follows: “An energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the onsite renewable exported energy.” U.S. Department of Energy. 2015. *A Common Definition for Zero Energy Buildings*, September 2015. Prepared by the National Institute of Building Sciences. Available: https://www.energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf. Accessed in January 2021.

**Building Energy and Water****Strategy 5: Decarbonize Buildings**

MEASURE E1: Decarbonize Existing Buildings (Core) ^Q

Require major renovations to be electric-ready.

Adopt building performance standards and reach code(s).

Adopt ZNE ordinance.

Conduct buildings portfolio analysis and cost feasibility study.

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

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



Building Energy and Water Strategy 5: Decarbonize Buildings

MEASURE E2: Decarbonize New Development ^Q

Annual GHG Emissions

REDUCTIONS

By 2030: 7,452

By 2035: 12.588

By 2045: 22,639

(units = MTCO_{2e})

Estimated COST

\$

PERFORMANCE OBJECTIVES

Require all applicable new buildings to include zero-GHG emission appliances. Provide affordable housing set-aside to offset first cost.

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

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

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

Require all new development to be electric-ready.

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E2.1—Adopt an ordinance requiring all applicable new buildings to be zero-GHG emission. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability. Require all new development to be electric-ready.

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

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



Building Energy and Water
Strategy 5: Decarbonize Buildings

MEASURE E3: Other Decarbonization Actions

Annual GHG Emissions

REDUCTIONS

Not quantified (supporting measure)

Estimated COST

\$-\$\$\$

PERFORMANCE OBJECTIVES

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

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

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

Replace high-GWP refrigerants with low-GWP refrigerants:

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

E3.1—Work with utilities to incorporate increasing levels of biomethane into the natural gas mix.

E3.2—Adopt a concrete code for new construction that limits embodied carbon emissions; specify code requirements of carbon intensity limit for concrete.

E3.3—Adopt reach code requirements that include performance standards to limit the amount of embodied carbon associated with construction.

E3.4—Develop a refrigerant management program that establishes a phase-out timeline for high-GWP refrigerants in existing buildings, incentivizes industrial equipment replacement, and specifies requirements for new development to use low-GWP refrigerants.



Building Energy and Water

Strategy 6: Improve Efficiency of Existing Building Energy Use

2045 VISION

All buildings will be zero net energy users

Strategy Description

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

Past and Current County Actions

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

Alignment with State Initiatives

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



Building Energy and Water

Strategy 6: Improve Efficiency of Existing Building Energy Use

MEASURE E4: Improve Energy Efficiency of Existing Buildings ^Q

Annual GHG Emissions

REDUCTIONS

By 2030: 22,274

By 2035: 41,255

By 2045: 203,455

(units = MTCO_{2e})

Estimated COST

\$—\$\$\$

PERFORMANCE OBJECTIVES

Reduce building energy use intensity below 2015 levels as follows:

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

Adopt building performance standards and reach code(s).

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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



Building Energy and Water

Strategy 7: Conserve Water

2045 VISION

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

Strategy Description

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

Past and Current County Actions

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

Alignment with State Initiatives

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



Building Energy and Water Strategy 7: Conserve Water

MEASURE E5: Increase Use of Recycled Water and Graywater Systems

Annual GHG Emissions

REDUCTIONS

Not quantified (supporting measure)

Estimated COST

\$—\$\$\$

PERFORMANCE OBJECTIVES

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

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

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

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

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

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

Implement a successful direct potable reuse project by 2025.

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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



Building Energy and Water Strategy 7: Conserve Water

MEASURE E6: Reduce Indoor and Outdoor Water Consumption ^Q

Annual GHG Emissions

REDUCTIONS

By 2030: 10,575

By 2035: 15,122

By 2045: 11,764

(units = MTCO_{2e})

Estimated COST

\$–\$\$

PERFORMANCE OBJECTIVES

Reduce total water use to less than:

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

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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



Waste (W)

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

Waste (W) comprises the following strategy and measures:

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

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



Waste

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

2045 VISION

Zero waste sent to landfill

Strategy Description

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

Past and Current County Actions

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

Alignment with State Initiatives

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



Waste

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

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

Annual GHG Emissions REDUCTIONS

By 2030: 154,514

By 2035: 248,362

By 2045: 342,934

(units = MTCO₂e)

Estimated COST

\$–\$\$

PERFORMANCE OBJECTIVES

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

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

Reduce the disposal of single-use plastics in landfills.

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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



Waste

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

MEASURE W2: Increase Organic Waste Diversion

Annual GHG Emissions REDUCTIONS

Not quantified (supporting measure)

Estimated COST

\$-\$\$\$\$

PERFORMANCE OBJECTIVES

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

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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

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



Agriculture, Forestry, and Other Land Use (A)

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

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

Strategy 9: Conserve and Connect Wildlands and Working Lands

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

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

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



Agriculture, Forestry, and Other Land Use

Strategy 9: Conserve and Connect Wildlands and Working Lands

2045 VISION

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

Strategy Description

Forests, chaparral shrublands, grasslands, deserts, and wetlands serve as carbon sinks that can sequester CO₂ that results from human activity. When these natural and working lands are converted to development and urbanized uses, that stored CO₂ is released into the atmosphere. Conserving and restoring these lands keeps carbon in the ground and provides a multitude of benefits, from maintaining biodiversity in the Significant Ecological Areas to preserving the character of unincorporated Los Angeles County's rural areas. Other important factors that enhance carbon storage and carbon sequestration potential include prioritizing habitat connectivity and strategically restoring degraded habitats and fallowed agriculture lands. This strategy will also consider optimal ecosystem services that are the result of the functional integrity of healthy ecosystems; prioritize the preservation of contiguous heterogeneous habitats to benefit biodiversity and help improve the chances of maintaining ecosystem health and carbon sequestration and storage capacity; and incorporate connectivity to optimize carbon storage sequestration. Further, this strategy will consider the role rural communities play in preserving and enhancing carbon sequestration capacity.

Past and Current County Actions

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

Alignment with State Initiatives

- California 2030 Natural and Working Lands Climate Change Implementation Plan: a collaborative effort by the California Natural Resources Agency, California Department of Food and Agriculture, California Environmental Protection Agency, CARB, and Strategic Growth Council to coordinate all natural and working lands programs under a united approach to maintain a resilient carbon sink and improve air and water quality, water quantity, wildlife habitat, recreation, and other benefits.

- AB 1757 of 2022: Requires the California Natural Resources Agency (CNRA), in collaboration with CARB, other state agencies, and an expert advisory committee, to determine a range of targets for natural carbon sequestration, and for nature-based climate solutions, that reduce GHG emissions in 2030, 2038, and 2045 by January 1, 2024. These targets must support state goals to achieve carbon neutrality and foster climate adaptation and resilience.
- SB 27 of 2021: Requires CNRA, in coordination with other state agencies, to establish the Natural and Working Lands Climate Smart Strategy by July 1, 2023. This law also requires CARB to establish specified CO₂ removal targets for 2030 and beyond as part of its Scoping Plan.



Agriculture, Forestry, and Other Land Use

Strategy 9: Conserve and Connect Wildlands and Working Lands

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

Annual GHG emissions

REDUCTIONS

By 2030: 8,953

By 2035: 17,906

By 2045: 26,858

(units = MTCO_{2e})

Estimated COST

\$\$-\$\$\$

PERFORMANCE OBJECTIVES

Reduce the amount of natural land converted for urbanized uses:

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

Conserve and restore new acres of wildland:

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

Manage new acres of wildland for wildfire risk reduction and carbon stock savings:

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

**Agriculture, Forestry, and Other Land Use****Strategy 10: Sequester Carbon and Implement Sustainable Agriculture****2045 VISION****Farms and urban forests that sequester carbon, conserve water, and enhance biodiversity****Strategy Description**

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

Past and Current County Actions

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

Alignment with State Initiative

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



Agriculture, Forestry, and Other Land Use
Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

MEASURE A2: Support Regenerative Agriculture

<p>Annual GHG Emissions REDUCTIONS</p> <p>Not quantified (supporting measure)</p> <p>Estimated COST</p> <p>\$-\$\$\$\$</p> <p>PERFORMANCE OBJECTIVES</p> <ul style="list-style-type: none">• Reduce the quantity of synthetic fertilizers used/applied.• Increase the number of acres of cover crops using regenerative agricultural techniques.	<p>DESCRIPTION</p> <p>Promote agricultural practices that sequester carbon and restore soil quality, biodiversity, ecosystems health, and water quality.</p> <p>IMPLEMENTING ACTIONS</p> <p><i>For tracking metrics and implementation details, see Appendix E.</i></p> <p>A2.1—Create fallow and field resting incentives to reduce bare-fallow land by adding cover crops and promoting crop rotation for active agricultural sites to improve soil quality and limit risks of nutrient erosion, pollutant runoff, and yield reduction. Create a carbon farming plan with the primary objectives of carbon removal and regenerative agriculture.</p> <p>A2.2—Provide compost and/or organic or nonsynthetic fertilizer to farmers free of charge or at a discounted rate.</p>
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Agriculture, Forestry, and Other Land Use

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

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

Annual GHG Emissions REDUCTIONS

By 2030: 4,602

By 2035: 7,080

By 2045: 10,310

(units = MTCO₂e)

Estimated COST

\$--\$

PERFORMANCE OBJECTIVES*

Plant new trees as follows:

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

Develop an Urban Forest Management Plan.

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

DESCRIPTION

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

IMPLEMENTING ACTIONS

For tracking metrics and implementation details, see Appendix E.

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

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

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

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CHAPTER 4

Implementation and Monitoring

4.1 Implementation Plan

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

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

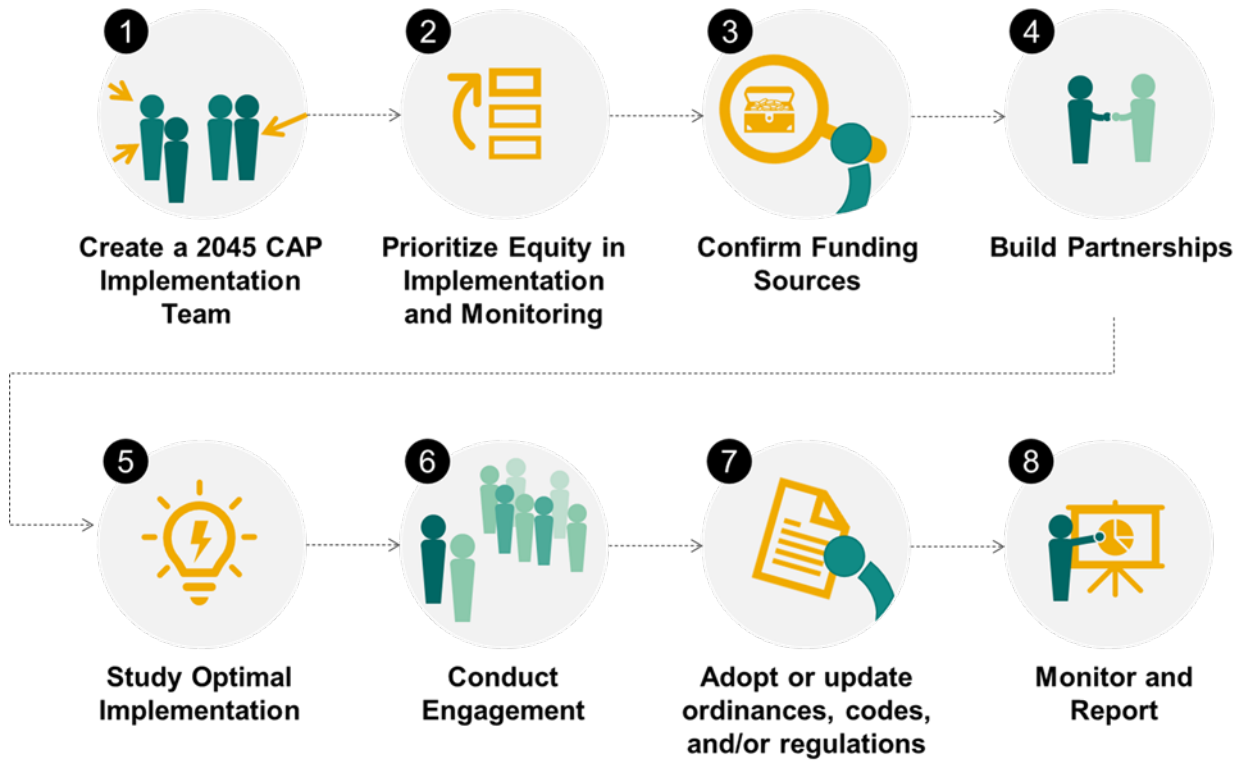


Figure 4-1: CAP Implementation Process

1. Create a 2045 CAP Implementation Team

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

2. Prioritize Equity in Implementation and Monitoring

Implementation efforts will continue to prioritize equity.

The following actions will guide implementation of the 2045 CAP:

- (1) Engage in meaningful public involvement that is anti-racist and inclusive.
- (2) Prioritize funding and action in frontline communities.
- (3) Design transportation and land use solutions to eliminate disproportionate burdens on frontline communities.
- (4) Partner with local and nonprofit organizations to assist low-income, disadvantaged, and vulnerable communities on information and resource access.

3. Confirm Funding Sources

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

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

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

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

4. Build Partnerships

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

5. Study Optimal Implementation

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

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

6. Conduct Engagement

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

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

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

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

- (1) Research, evaluate, and/or study.
- (2) Engage the public and stakeholders (gather information).
- (3) Draft the ordinance, code, or regulation.
- (4) Publish the draft ordinance, code, or regulation for public review.

- (5) Revise the draft ordinance, code, or regulation in response to public comments.
- (6) Conduct formal public hearings (includes a public comment period).
- (7) Adopt the ordinance, code, or regulation.
- (8) Implement and enforce the ordinance, code, or regulation.

8. Monitor and Report

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

4.2 Monitoring and Reporting

GHG Inventory and CAP Updates

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

Monitoring

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

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

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

Reporting

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

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

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

STRATEGY	TRACKING METRICS
Strategy 1: Decarbonize the Energy Supply	<ul style="list-style-type: none"> • Number of oil and gas operations/wells decommissioned and remediated • Emissions reductions achieved through oil and gas closures • Decommissioning dates and details (i.e., fuel consumption and GHG emissions) for the Olive View Cogeneration Facility • Number of CCS systems constructed • CARB Pollution Mapping Tool data for natural gas leakage • Participation rates in CPA's Green Power option or SCE's Green Rate option • Renewable energy portfolio (percent share) • Electricity grid emission factor(s) • Rooftop solar PV installations for existing multifamily residential buildings and existing commercial buildings • Rooftop solar PV installations for new multifamily residential buildings • Rooftop solar PV installations for new commercial buildings • Kilowatts of solar capacity installed on County facilities • Total installed distributed energy resource capacity (e.g., kilowatts of solar capacity installed) • Total battery capacity installed • Total community electricity storage capacity • Number and capacity of microgrids established • Number and performance of energy efficiency and resilience projects implemented in facilities providing critical community services • Number and type of projects performing CAP consistency review • Dollars invested into future Offsite GHG Reduction Program, and estimated energy savings and GHG emissions reductions • Energy benefits (all items above) delivered in frontline communities
Strategy 2: Increase Densities and Diversity of Land Uses Near Transit	<ul style="list-style-type: none"> • Commute mode share • Population residing within HQTAs (and dwelling units within HQTAs) • Jobs located within HQTAs • Total acres of commercial or industrial zones in HQTAs that can support jobs • Residential density (DU/acre) for new development • Daily VMT and vehicle trips • Percent of new units in TODs that provide affordable housing

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

STRATEGY	TRACKING METRICS
Strategy 3: Reduce Single-Occupancy Vehicle Trips	<ul style="list-style-type: none"> • Commute mode share • Bikeway miles • Pedestrian walkway miles • Total transit service hours • Decrease in transit headways • Miles of bus-only lanes constructed • Number of free and discounted transit passes issued • Number of intersections with signal prioritization • Number and location of shade and lighting projects planned and completed • Parking pricing information, including unbundling • Number and location of car-free areas • Number of ZEV buses and shuttles in operation • Percent change in parking supply; number of new and expanded parking benefit districts • Collisions involving pedestrians or bicyclists • Transit and active transportation benefits (see all items above) delivered in frontline communities
Strategy 4: Institutionalize Low-Carbon Transportation	<ul style="list-style-type: none"> • EV, ZEV, and near-zero-emission vehicle registrations for light-, medium-, and heavy-duty vehicles, including transit fleets, County-owned fleet vehicles, and drayage trucks • Total sales of gasoline and diesel fuel within unincorporated Los Angeles County • Total number of gas stations decommissioned • Number of public, shared private, and private EVCSs installed • Number of EVCSs installed at County facilities • Number of e-scooters/e-bikes made available • Number of neighborhood EVs made available • Quantity of biomethane and biogas sold and consumed in unincorporated Los Angeles County • Number of County-owned ZEV buses, shuttles, and fleet vehicles in operation • Number of off-road equipment pieces electrified • Off-road vehicle and equipment fleet count, type, and fuel type • Quantity and fraction of new EV charging infrastructure provided in frontline communities
Strategy 5: Decarbonize Buildings	<ul style="list-style-type: none"> • Number of existing buildings retrofitted with electric appliances (residential and nonresidential) • Number of new fully electric and ZNE buildings constructed (residential and nonresidential) • Total consumption of electricity and natural gas for buildings by sector • Proportion of biomethane in utility natural gas mix • Quantity of low-carbon concrete and materials used in new construction • Dollars invested into future Impact Mitigation Fund, and estimated energy savings and GHG emission reductions • Quantity of low-GWP refrigerants used/charged • Percent and quantity of building decarbonization projects in frontline communities, multifamily developments, and affordable housing

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

STRATEGY	TRACKING METRICS
Strategy 6: Improve Efficiency of Existing Building Energy Use	<ul style="list-style-type: none"> Number of new buildings that meet 2022 Title 24 requirements (and future Title 24 requirements) Number of buildings and homes retrofitted for energy efficiency Total electricity and natural gas savings achieved through retrofits Total consumption of electricity and natural gas for buildings by sector Number and area of cool and green roofs installed Percent and quantity of energy efficiency projects in frontline communities, multifamily developments, and affordable housing
Strategy 7: Conserve Water	<ul style="list-style-type: none"> Unincorporated Los Angeles County demand met by recycled water, graywater, or direct potable reuse Per capita water consumption Number of buildings and homes retrofitted with water-efficient devices Percent and quantity of building water retrofit projects in frontline communities, multifamily developments, and affordable housing
Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream	<ul style="list-style-type: none"> Annual waste tons to landfill and per-capita waste generation and landfilling rate Landfill diversion rate and disposal tonnage Total landfill emissions Organic waste diversion rate and disposal tonnage Annual quantity of organic waste treated in composting and anaerobic digestion facilities Recycling diversion rate and disposal tonnage Reported GHG emissions from waste-to-energy facilities (biogenic carbon dioxide and non-biogenic methane and nitrous oxide) Recycling and composting services provided in frontline communities, multi-family developments, and affordable housing
Strategy 9: Conserve and Connect Wildlands and Working Lands	<ul style="list-style-type: none"> Acres of wildlands conserved Acres of wildlands restored Acres of farmlands conserved Acres of farmlands restored Acres of wildlands managed for wildfire risk reduction and carbon stock savings Acres of urban and peri-urban agriculture created Percent and quantity of projects completed in frontline communities, multifamily developments, and affordable housing
Strategy 10: Sequester Carbon and Implement Sustainable Agriculture	<ul style="list-style-type: none"> Quantity of compost used as fertilizer Quantity of organic and synthetic fertilizers used/applied Increase in number of acres of cover crops using regenerative agricultural techniques Number of new trees planted Urban tree canopy area Area of impervious surfaces converted to urban forest Urban tree canopy cover and number of new trees planted in frontline communities, multi-family developments, and affordable housing

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

4.3 CEQA

CEQA and the 2045 Climate Action Plan

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

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

The Program EIR describes planned activities that would implement the 2045 CAP and addresses related environmental impacts comprehensively, based on the information that was reasonably available at the time the environmental review process was initiated. The Program EIR is a “first-tier” document that anticipates later environmental review of specific projects.³⁹

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

Consistency Review Checklist

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

³⁹ *Tiering* is defined in CEQA Guidelines Section 15385 as referring “to the coverage of general matters in broader EIRs (such as on general plans or policy statements) with subsequent narrower EIRs or ultimately site-specific EIRs incorporating by reference the general discussions and concentrating solely on the issues specific to the EIR subsequently prepared. Tiering is appropriate when the sequence of EIRs is from a...program EIR to a program, plan, or policy EIR of lesser scope or to a site-specific EIR.”

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

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

To demonstrate compliance with the 2045 CAP CEQA Streamlining Requirements, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emissions reduction measures. The project review checklist will be used for projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for streamlined project-specific CEQA GHG analysis.

Offsite GHG Reduction Program

Action ES5.3 would establish an Offsite GHG Reduction Program (Offsite Program) for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment. This program would be used in tandem with the 2045 CAP Consistency Checklist for projects that propose GHG emissions reduction measures as alternatives to those identified in Table F-1 of the 2045 CAP Consistency Checklist, or that propose to include additional GHG emissions reduction measures beyond those described in Table F-1. Such projects must not otherwise be required by law or regulation and would not have happened on the 2045 CAP's proposed schedule but for the requirements placed on the project by the 2045 CAP Checklist. Section F.4 of Appendix F includes a framework for the forthcoming Offsite Program.

Developing a local voluntary off-site reduction program and associated GHG mitigation market will help the County provide local benefits.⁴⁰ CARB supports the idea of “off-site GHG mitigation” in Appendix D of the 2022 Scoping Plan for projects that have maxed-out their on-site GHG reduction actions: “If implementation of all feasible on-site GHG reduction measures is insufficient to reduce a project’s impact to a less-than-significant level, the State recommends that the lead agency next explore options to fund or implement **local**, off-site direct GHG reduction strategies.”⁴¹

Carbon Removal and Sequestration

The 2045 CAP shows that unincorporated Los Angeles County can reduce emissions to 85 percent below 1990 levels by 2045 through numerous aggressive, forward-looking strategies and measures, but the 2045 CAP alone will not be enough for unincorporated Los Angeles County to

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

⁴¹ California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, “Local Actions.” November 16, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf>. Accessed January 2023.

achieve carbon neutrality. As discussed in Section 3.2 above, even with CAP implementation, there will still be almost 850,000 MTCO₂e of residual emissions in 2045. To achieve carbon neutrality, all remaining emissions must be compensated for by removing carbon from the atmosphere. According to the 2022 Scoping Plan, “Carbon removal and sequestration will be an essential tool to achieve carbon neutrality, and the modeling clearly shows there is no path to carbon neutrality without carbon removal and sequestration.”⁴² The 2022 Scoping Plan includes CO₂ removal and carbon capture targets of 20 million metric tons of CO₂ (MMTCO₂) and 100 MMTCO₂ by 2030 and 2045, respectively. A slate of legislation on carbon removal and sequestration was passed in 2022, including AB 1279, SB 905, SB 1137, and AB 1757 (see Table 1-2 above).

Action ES1.3 requires the development of a carbon removal strategy that considers direct air capture and carbon and sequestration (CCS). CCS will be an essential component of the County’s carbon neutrality strategy. The first step would be to assess the feasibility of various carbon removal tools within areas of unincorporated Los Angeles County. This would include CCS, mechanical carbon removal, and nature-based carbon sequestration. The strategy would assess regional and statewide partnerships and programs, given that regional collaboration has the potential to address barriers to carbon removal and expand opportunities for successful local reductions of GHG emissions. Regional collaboration can also lend support to lead agencies and air districts as they seek opportunities for local GHG reduction programs; for example, the San Luis Obispo County Air Pollution Control District, County of Santa Barbara, County of Ventura, City of Santa Barbara, City of San Luis Obispo, and Community Environmental Council formed a tactical Regional GHG Collaborative Group to understand and identify opportunities for local carbon sequestration and GHG reduction projects.⁴³

Evolving state regulations, programs, and financial incentives will provide new opportunities for the County to compensate for any residual emissions that cannot be directly eliminated. For example, almost \$9 billion in carbon capture and sequestration support was included in the \$1 trillion Infrastructure Investment and Jobs Act of 2021, which includes funding to establish four direct air capture hubs. SB 27 of 2021 will provide carbon removal projects via an in-state project registry, which will serve as a database of projects in the state that drive climate action on natural and working lands. SB 905 of 2022 requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate CCUS and CO₂ removal projects and technology; these projects could also support the County’s aspirations to achieve carbon neutrality.

Carbon Offsets/Credits Feasibility Study

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

⁴² California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16. Available: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>. Accessed in December 2022.

⁴³ California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, “Local Actions.” November 16, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf>. Accessed January 2023.

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

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

APPENDIX A

Greenhouse Gas Accounting Methods, Business-as-Usual Forecast, and Emission Reduction Targets

Purpose

This Appendix describes the greenhouse gas (GHG) accounting and projections methods for calendar year 2015 and 2018 for unincorporated Los Angeles County (henceforth referred to as “Unincorporated Los Angeles County” unless otherwise specified). It also presents methods for the 1990 and 2010 emissions backcasts; the business-as-usual (BAU) forecasts for 2030, 2035, and 2045; and the derivation of the 2045 CAP’s emission reduction targets for 2030, 2035, and 2045. The document is organized into four sections corresponding with the following objectives:

Section A.1: Greenhouse Gas Emissions Inventory: 2015 and 2018

This section describes the methods for estimating baseline 2015 GHG emissions from community-induced activities and sources along with updated emission for the year 2018. The community-scale inventory includes emissions from transportation; stationary energy; industrial processes and product use (IPPU); waste and wastewater; and agriculture, forestry, and other land use (AFOLU) emissions.

Section A.2: 1990 and 2010 Greenhouse Gas Inventory and Backcasting Methods

This section describes the approach for estimating unincorporated Los Angeles County’s GHG emissions in the year 2010 and 1990. The backcast aligns the 2010 inventory with the updated methods and emission factors used in the 2015 and 2018 inventory updates, and projects emissions back to 1990 for purposes of aligning the 2045 CAP’s target with the statewide target for 2030.

Section A.3: 2018 to 2045 Business-as-Usual Forecasts

This section describes the approach for modeling the BAU scenario, which projects future emissions based on current population and regional growth trends, land use growth patterns, and regulations or policies introduced before the 2018 inventory year. The BAU scenario demonstrates the growth in GHG emissions that would occur if no further action were to be taken by the County of Los Angeles (County) or the State of California after 2018.

Section A.4: Derivation of the 2045 CAP's Emission Reduction Targets

This section describes the approach taken to derive the 2045 CAP's GHG emission reduction targets for 2030, 2035, and 2045, and how these targets align with the statewide targets codified in SB 32 for 2030 and EO B-55-18 for 2045. This section provides substantial evidence for CEQA purposes that the 2045 CAP's targets represent levels of significance for the cumulative impact of unincorporated Los Angeles County's GHG emissions.

A.1 Greenhouse Gas Emissions Inventory: 2015 and 2018

2015 & 2018 GHG Emissions Inventories

Introduction

The 2015 and 2018 Community-scale GHG emissions inventories for unincorporated Los Angeles County were developed using the Global Protocol for Community-scale GHG Emission Inventories (GPC).¹ This protocol is used for calculating and reporting emissions from community activities and sources from seven gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), hexafluoride (SF₆), and nitrous trifluoride (NF₃). GHG emissions from these activities are organized into five sectors: transportation, stationary energy, waste (including wastewater), industrial processes and product use (IPPU) and agriculture, forestry and other land use (AFOLU). The protocol further offers two related frameworks—the Scopes Framework and the City-induced Framework—for reporting emissions from each sector:

Scopes Framework: This framework captures GHG emissions produced within a geographic boundary by categorizing emissions as scope 1, 2, and 3 emissions in each Sector:

- **Scope 1:** Emissions produced from activities and sources within unincorporated Los Angeles County boundaries.
- **Scope 2:** Emissions generated from the use of grid-supplied electricity, heat, steam and/or cooling within unincorporated Los Angeles County boundaries; and
- **Scope 3:** Emissions occurring outside unincorporated Los Angeles County boundaries due to activities taking place within unincorporated Los Angeles County boundaries.

¹ World Resources Institute, C40 Cities Climate Leadership Group, and ICLEI - Local Governments for Sustainability. *Global Protocol for Community-scale GHG Emission Inventories*, Version 1.1. December, 2014. Available at: <https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>. Accessed January 2021.

City-induced Framework: This framework measures GHG emissions attributable to activities and sources within a geographic boundary and covers selected scope 1, 2, and 3 emissions from each sector. This framework offers two reporting levels:

- **BASIC:** Includes emissions from transportation, stationary energy, and waste sectors.
- **BASIC+:** Includes all BASIC requirements as well as emissions from transmission and distribution grid losses, transboundary transportation, in-boundary generated waste emission sources, IPPU, and AFOLU.

The 2015 and 2018 GHG emissions inventories for unincorporated Los Angeles County use the City-induced BASIC+ Framework. This includes Scope 1, 2, and 3 emissions sources. In other words, the GHG inventories comprise emissions from activities occurring within unincorporated Los Angeles County areas, including emissions that occur elsewhere because of those activities. A good example is solid waste, which is generated locally but disposed of at a landfill outside the city, where it decomposes and generates GHGs. Solid waste is a Scope 3 emissions source.

The GHG inventories use global warming potential (GWP) values from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5),² unless otherwise specified. The inventory is prepared using sector-specific generation and resource consumption data for relevant sub-sectors included in the BASIC+ protocol. The accounting methods, data sources and emission factors used for accounting 2015 and 2018 emissions are detailed in the subsequent sections.

The general methods used for the 2015 and 2018 inventories are the same and the descriptions herein apply to both of the inventory years.

It should also be noted that the Los Angeles County Sanitation Districts has prepared a separate GHG inventory using site-specific data rather than population-based estimates, which were used for certain sources in the Draft 2045 CAP's 2015 and 2018 inventories.^{3,4} Los Angeles County and the Sanitation Districts will work cooperatively to achieve carbon neutrality.

² IPCC, Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. 2014. Available at: <https://archive.ipcc.ch/report/ar5/syr/>. Accessed January 2021.

³ Los Angeles County Sanitation Districts, 2021 Greenhouse Gas Inventory Report. 2022.

⁴ Environmental Science Associates, Positive Verification Opinion for Greenhouse Gas Emissions and Reductions for Emissions Year 2021. 2022.

Stationary Energy

This sector includes emissions from energy use (natural gas and electricity) in residential, commercial/ institutional/agricultural, and manufacturing/industrial buildings, energy generation facilities owned by the County, off-road equipment, and fugitive emissions from oil and natural gas systems. **Table A-1** presents scopes, activity data, and emissions for the stationary energy sector. **Figure A-1** compares 2015 and 2018 GHG emissions from energy use by sub-sector.

Table A-1: Stationary Energy Scope, Activity, and GHG Emissions by Sub-sector

2015 INVENTORY				2018 INVENTORY	
CATEGORY	SCOPE	ACTIVITY	EMISSIONS (MTCO ₂ E)	ACTIVITY	EMISSIONS (MTCO ₂ E)
Stationary Energy					
Residential Buildings	All	Natural Gas: 99,802,009 therms Electricity: 2,032,945,391 kWh	1,030,285	Natural Gas: 100,918,233 therms Electricity: 1,855,862,580 kWh	962,743
Commercial, Institutional, and Agricultural Buildings	All	Natural Gas: 18,162,374 therms Electricity: 1,181,331,358 kWh	386,753	Natural Gas: 35,862,112 therms Electricity: 1,342,822,146 kWh	349,373
Manufacturing and Construction Buildings	All	Natural Gas: 17,177,369 therms Electricity: 686,002,430 kWh	309,449	Natural Gas: 13,143,126 therms Electricity: 1,025,769,024 kWh	244,417
Energy Industries	1 & 3	2 CHP and District Energy facilities 1 Waste to Energy facility ^a 3 Biomass and Auxiliary Power facilities ^a	121,252	2 CHP and District Energy facilities 1 Waste to Energy facility ^a 3 Biomass and Auxiliary Power facilities ^a	98,554
Fugitive Emissions from Oil and Natural Gas Systems	1	1 Natural Gas Distribution and Transportation facility 1 Crude Petroleum & Natural Gas Extraction site	58,222	1 Natural Gas Distribution and Transportation facility 1 Crude Petroleum & Natural Gas Extraction site	41,066
Agriculture, Forestry and Other Fishing Activities	1	Off-road agricultural vehicles using diesel or gasoline	2,675	Off-road agricultural vehicles using diesel or gasoline	2,658
TOTAL			1,908,637		1,698,809

NOTES:

^a. Biogenic emissions from these facilities are not included in the inventory; only non-biogenic CH₄ and N₂O emissions are included, consistent with the GPC Protocol.

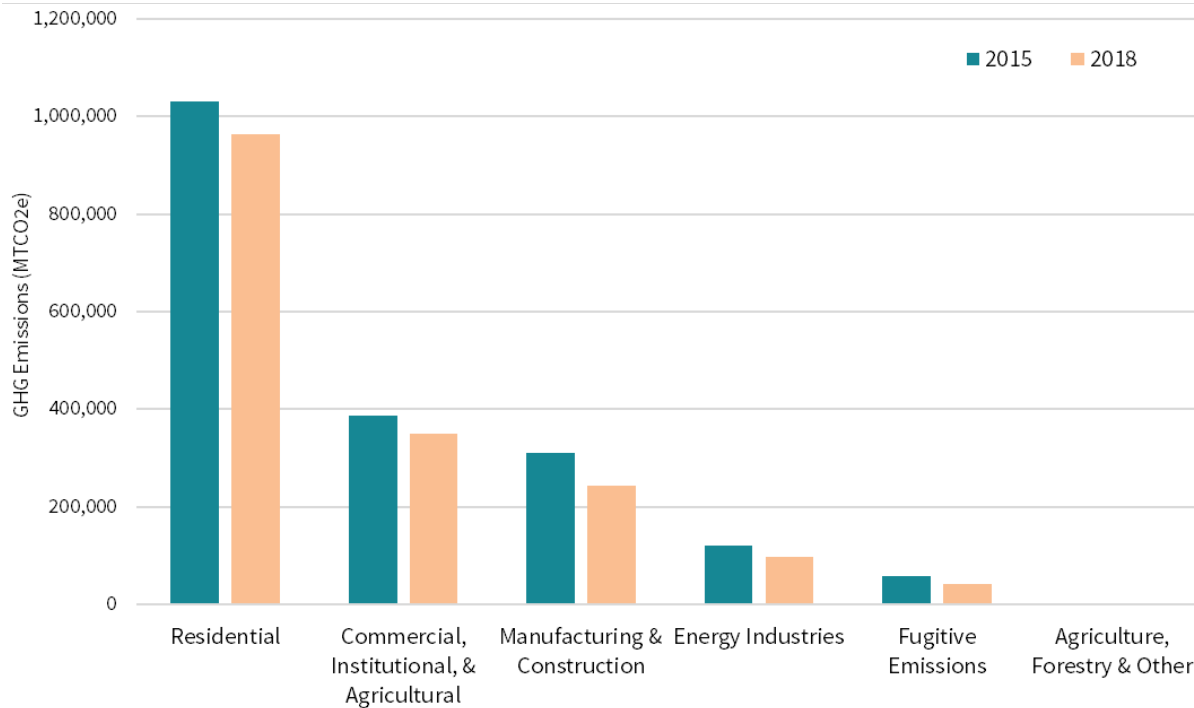


Figure A-1: 2015 & 2018 Energy Emissions by Sub-sector

RESIDENTIAL BUILDINGS

This category includes direct emissions from the consumption of natural gas and indirect emissions from grid-supplied electricity by residential buildings in unincorporated areas. Direct GHG emissions from natural gas consumption in residential buildings are calculated using SoCalGas natural gas consumption data and emission factors from the Climate Registry.⁵ Indirect GHG emissions from electricity consumption in residential buildings are calculated using data from SCE including electricity consumption, emission factors, and power mix. In 2018, SCE's power mix was 36 percent eligible renewable, 10 percent hydropower and nuclear (carbon-free), 17 percent natural gas, and 37 percent unspecified fossil-fuel sources. SCE's emission rate for 2018 electricity was 513 pounds per MWh.⁶ Emissions associated with transmission and distribution losses are accounted using a loss factor of 4.8 percent for California from EPA eGRID.⁷

Data Sources:

- SCE Consumption Data
Provided by SoCal Edison via County DRP (2021)
- SoCalGas Consumption Data
Provided by SoCalGas via County DRP (2021)
- SCE Emission Factor
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>

⁵ The Climate Registry, Default Emission Factors. May 1, 2018. Available at: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf>. Accessed January 2021.

⁶ California Energy Commission (CEC), 2018 Power Content Label. July 2019. Available at: https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Southern_California_Edison.pdf. Accessed January 2021.

⁷ EPA, eGRID. 2018. Available at: <https://www.epa.gov/egrid>. Accessed January 2021.

- Climate Registry
Link: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf> (the 2018 document was the latest available at the time the inventories were prepared)
- EPA eGRID
Link: <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-eGRID>

COMMERCIAL AND INSTITUTIONAL BUILDINGS

This category includes direct emissions from the consumption of natural gas and indirect emissions from grid-supplied electricity by non-residential buildings including commercial, municipal, institutional (such as schools, hospitals, and other public facilities) and agricultural buildings. Direct GHG emissions from natural gas consumption in non-residential buildings are calculated using SoCalGas natural gas consumption data and emission factors from The Climate Registry.⁸

In June 2018, non-residential customers in unincorporated Los Angeles County were automatically enrolled in the Clean Power Alliance's (CPA) "Clean" rate option. While participation data for 2018 were unavailable when the 2018 inventory was developed, a July 2021 member status report indicated a 98 percent participation rate for all non-residential customers in unincorporated Los Angeles County in 2021.⁹ For purposes of the 2018 GHG inventory, it is conservatively assumed that half the annual electricity consumption is attributed to SCE and half to CPA because full CPA enrollment for non-residential customers was not completely in effect until 2019. Under the Clean rate option in 2018, non-residential customers received 61 percent of their electricity from eligible renewable sources via the CPA, 26 percent from carbon-free sources like hydropower, and 13 percent from unspecified fossil-fuel sources like natural gas and coal. GHG emissions from CPA-provided electricity are calculated using CPA data including electricity consumption, emission factors, and power mix.¹⁰ CPA's emission rates for 2018 were 10.6 pounds per MWh for the "Lean" rate and 9.8 pounds per MWh for the Clean rate.¹¹ GHG emissions from SCE-provided electricity are calculated using SCE data including electricity consumption, emission factors, and power mix. SCE's emission rate for 2018 electricity was 513 pounds per MWh.¹² Emissions associated with transmission and distribution losses are accounted using a loss factor of 4.8 percent for California from the U.S. EPA's eGRID2018 Summary Table (WECC California subregion).¹³

Data Sources:

- SCE Consumption Data
Provided by SoCal Edison via County DRP (2021)
- SoCalGas Consumption Data
Provided by SoCalGas via County DRP (2021)

⁸ The Climate Registry, Default Emission Factors. May 1, 2018. Available at: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf>. Accessed January 2021.

⁹ CPA, Member Status Report: Los Angeles County. July 28, 2021.

¹⁰ CEC, 2018 CPA Power Content Label. July 2019. Available at: https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Clean_Power_Alliance.pdf. Accessed January 2021.

¹¹ The Climate Registry, Utility-Specific Emission Factors. 2020. Available at: <https://www.theclimateregistry.org/our-members/cris-public-reports/>. Accessed January 2021.

¹² Edison International, 2020 Sustainability Report. 2021. Available at: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-2020-sustainability-report.pdf>. Accessed January 2021.

¹³ EPA, eGRID. 2018. Available at: <https://www.epa.gov/eGRID>. Accessed January 2021.

- CPA Member Status Report (July 28, 2021)
Provided by CPA via County CSO (July 28, 2021)
- SCE Emission Factor
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission Factor
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- Climate Registry
Link: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf>
- Climate Registry Information System (CRIS)
Link: [https://cris4.org/\(S\(zr3twbbnour5a5jfb1iykcx\)\)/frmLILogin.aspx](https://cris4.org/(S(zr3twbbnour5a5jfb1iykcx))/frmLILogin.aspx)
- EPA eGRID
Link: <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-eGRID>

MANUFACTURING AND INDUSTRIAL BUILDINGS

This category includes direct emissions from the consumption of natural gas and indirect emissions from grid-supplied electricity consumption in manufacturing and industrial buildings. This category also includes direct emissions from fossil fuel combustion for electricity and heat generation by stationary equipment (such as boilers, furnaces, burners, turbines, heaters, incinerators, engines and flares) and off-road equipment (such as vehicle and mobile machinery) that are used inside building property premises.

GHG emissions from natural gas and electricity consumption are estimated using the same assumptions and methods stated under Commercial and Institutional Buildings above.

Emissions from fuel combustion of other energy sources in manufacturing facilities are documented using the California Air Resource Board's (CARB) Pollution Mapping Tool.¹⁴ This tool provides CH₄, CO₂ and N₂O from on-site combustion and industrial processes for each facility location. CARB's OFFROAD2017 ORION¹⁵ tool is used to estimate emissions from fuel consumption by industrial and construction equipment used inside building premises. This tool provides daily CO₂ emissions and annual fuel consumption of diesel, gasoline and natural gas by manufacturing and construction sectors for Los Angeles County as a whole, including cities. (This area is referred to herein as "Countywide.") Emissions from unincorporated Los Angeles County are estimated by scaling countywide GHG emissions based on the number of jobs in manufacturing and construction sectors in unincorporated areas in 2017.

Note: This category only reports fossil fuel combustion-related emissions from CARB's Pollution Mapping Tool. These emissions do not include fugitive process emissions from manufacturing facilities since they are reported under the IPPU category. Emissions reported in CARB's Pollution Mapping tool are largely informed by emissions reported under the CARB's Mandatory GHG Reporting Regulations (MRR).¹⁶ The MRR only requires facilities emitting more than 10,000 metric tons carbon dioxide equivalent (MTCO₂e) to report their emissions. Emissions from facilities emitting under 10,000 MTCO₂e are not available and have therefore not been accounted in this inventory.

¹⁴ CARB, Pollution Mapping Tool. 2018. Available: https://ww3.arb.ca.gov/ei/tools/pollution_map/. Accessed January 2021.

¹⁵ CARB, OFFROAD ORION. 2018. Available at: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools>. Accessed January 2021.

¹⁶ CARB, Mandatory GHG Reporting Regulations. April 1, 2019. Available at: <https://ww2.arb.ca.gov/mrr-regulation>. Accessed January 2021.

Data Sources:

- SCE Consumption Data
Provided by SoCal Edison via County DRP (2021)
- SoCal Gas Data
Provided by SoCal Gas via County DRP (2021)
- CPA Membership Report
Provided by CPA via County CSO (July 28, 2021)
- SCE Emission Factor
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- EPA eGRID
Link: <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-eGRID>
- CARB OFFROAD2017 ORION
Link: <https://www.arb.ca.gov/orion/>
- CARB Pollution Mapping Tool
Link: https://www.arb.ca.gov/ei/tools/pollution_map/
- Jobs in Manufacturing and Construction
Link: <https://scag.ca.gov/sites/main/files/file-attachments/losangelescountyp.pdf?1605653130>

ENERGY INDUSTRIES

The Energy Industries category includes emissions from primary fuel production (such as coal mining and oil and gas extraction), fuel processing and conversion (such as coal to coke in coke ovens) and on-site fuel combustion for auxiliary energy production (such as electricity generation and district heating).

Emissions from fuel and energy production in combined heat and power (CHP) plants, biomass power stations, and waste to energy facilities in unincorporated areas are documented using CARB's Pollution Mapping Tool.¹⁷ For CHP and district energy source, the inventory includes direct natural gas combustion emissions from the Pitchess Cogeneration Station in Saugus and the Olive View Medical Center Cogeneration Station in Sylmar. Pitchess Cogeneration Station and the Olive View Medical Center Cogeneration Station were included because these facilities are both within unincorporated Los Angeles County and owned and operated by the County. Emissions data for all three facilities were obtained from CARB's 2021 MRR database.

Waste-to-Energy facilities include Bradley Landfill in Sun Valley and the Calabasas Landfill in Agoura. These facilities convert landfill methane to energy. Only non-biogenic CH₄ and N₂O emissions from these facilities were included in the inventory because the CO₂ emissions from landfill gas combustion are considered biogenic (not anthropogenic) emissions sources by the GPC and should therefore be excluded.¹⁸ Biomass and auxiliary power facilities include Ameresco Chiquita Energy LLC in Castaic, Calabasas Landfill in Agoura, MM Lopez Energy LLC in Lake View Terrace, and Sunshine Gas Producers LLC in Sylmar. Similar to the waste to energy facilities above, only non-biogenic CH₄ and N₂O emissions from these facilities were included in the inventory.

¹⁷ Emissions reported under CARB's Pollution Mapping Tool are largely informed by emissions reported under CARB's Mandatory GHG Reporting Regulations (MRR). The MRR only requires facilities emitting more than 10,000 MTCO₂e to report their emissions. Emissions from facilities emitting under 10,000 MTCO₂e are not available and have therefore not been accounted in this inventory.

¹⁸ According to the GPC, "Biogenic emissions are those that result from the combustion of biomass materials that store and sequester CO₂, including materials used to make biofuels (e.g. trees, crops, vegetable oils, or animal fats)."

Data Sources:

- CARB Pollution Mapping Tool
Link: https://www.arb.ca.gov/ei/tools/pollution_map/
- CARB MRR Database
Link: <https://ww2.arb.ca.gov/mrr-data>

AGRICULTURE, FORESTRY AND OTHER FISHING ACTIVITIES

Emissions from direct fuel combustion associated with agricultural activities typically result from the operation of farm vehicles and machinery (stationary and mobile) and generators to power lights, pumps, heaters, coolers and other equipment. CARB's OFFROAD2017 ORION¹⁹ tool was used to estimate Countywide emissions from direct fuel consumption by agricultural equipment (including plant and animal cultivation, afforestation and reforestation activities, and fishery activities). GHG emissions from the unincorporated Los Angeles County areas were estimated by scaling countywide GHG emissions using the cropland acres in unincorporated areas in 2016.

Note: For the agricultural sector, this category only reports emissions associated with off-road vehicles and equipment. Emissions from agricultural buildings (natural gas and electricity consumption) are reported under the commercial and institutional buildings category.

Data Sources:

- CARB OFFROAD ORION
Link: <https://www.arb.ca.gov/orion/>
- NASS CropScape
Link: <https://nassgeodata.gmu.edu/CropScape/>

FUGITIVE EMISSIONS FROM OIL AND NATURAL GAS SYSTEMS

Fugitive emissions include all intentional and unintentional emissions from the extraction, processing, storage and transport of oil and natural gas to the point of final use. The primary sources of fugitive emissions from oil and natural gas systems include equipment leaks, evaporation and flashing losses, venting, flaring, incineration, and accidental releases. GHG emissions from oil and natural gas systems in unincorporated areas are documented using CARB's Pollution mapping tool.²⁰

Data Sources:

- CARB Pollution Mapping Tool
Link: https://www.arb.ca.gov/ei/tools/pollution_map/

¹⁹ CARB, OFFROAD ORION. 2018. Available at: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools>. Accessed January 2021.

²⁰ CARB, Pollution Mapping Tool. 2018. Available: https://ww3.arb.ca.gov/ei/tools/pollution_map/. Accessed January 2021.

Transportation

The transportation sector includes emissions from fuel (gasoline, diesel, and natural gas) and electricity consumption in on-road passenger vehicles (cars, light-, medium-, and heavy-duty trucks), buses, and rail systems. Note that while Metro and Metrolink have GHG inventories for the transportation services provided by the respective agencies, they do not estimate emissions by local jurisdiction. Therefore, bus and railway emissions are independently estimated for unincorporated Los Angeles County. **Table A-2** presents scopes, activity data, and emissions for the transportation sector. **Figure A-2** shows the contribution of each subsector to the Transportation sector for both the 2015 and 2018 inventories.

Table A-2: Transportation Scope, Activity, and GHG Emissions by Sub-sector

		2015 INVENTORY		2018 INVENTORY	
CATEGORY	SCOPE	ACTIVITY	EMISSIONS (MTCO ₂ E)	ACTIVITY	EMISSIONS (MTCO ₂ E)
Transportation					
Passenger Vehicles	1 & 3	18,982,668 miles/day	2,797,360	19,074,692 miles/day	2,665,824
Buses	1 & 3	1,392,461,970 miles/year	31,360	1,143,144,015 miles/year	29,371
Railway	1 & 3	Metro: 634,484,952 miles/year Metrolink: 24,798 riders/day	9,413	Metro: 689,995,896 miles/year Metrolink: 25,690 riders/day	9,490
TOTAL			2,838,133		2,704,685

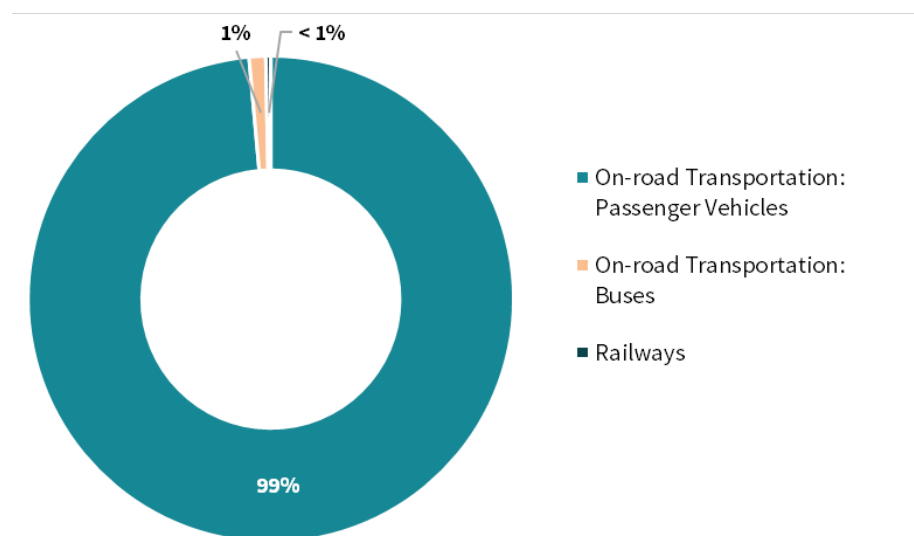


Figure A-2: 2015 & 2018 Transportation Emissions by Sub-sector

ON ROAD TRANSPORTATION: PASSENGER VEHICLES AND TRUCKS

Emissions from passenger vehicles and trucks are estimated based on daily vehicle trips and vehicle miles traveled (VMT) by each vehicle type. VMT for unincorporated Los Angeles County is estimated using a trip-based travel forecasting model developed by Southern California Association of Governments (SCAG). SCAG's 2016 Regional Travel Demand Model, the version for which a complete dataset was available at the time of modeling, was used by Fehr and Peers (F&P) to analyze the transportation network and socioeconomic data such as population, household, and employment, to forecast daily vehicle trips and VMT for each traffic analysis zone (TAZ) within unincorporated Los Angeles County.²¹

The 2016 SCAG model has a base year of 2012 and horizon year of 2040. VMT for the inventory years, including 2015 and 2016, was linearly interpolated from the 2012 and 2040 model values. Daily VMT are estimated using the origin-destination analysis approach (full accounting method). The Full Accounting Method accounts for VMT depending on where the trip is starting and ending. This method tracks (and “fully accounts” for) all the vehicle trips being generated by a geographic area (i.e., a city) across the entire regional network, and allows for the isolation of different types of VMT as follows.

- **Internal-internal (II) VMT:** Includes all trips that begin and end entirely within the geographic area of study.
- **One-half of internal-external (IX) VMT:** Includes one-half of trips with an origin within the geographic area of study and a destination outside of this area. This assumes that the geographic area under study shares half the responsibility for trips traveling to other areas.
- **One-half of external-internal (XI) VMT:** Includes one-half of trips with an origin outside of the geographic area of study and a destination within this area. Similar to the IX trips, the geographic area of study shares the responsibility of trips traveling from other areas.
- **External-external (XX) VMT:** Trips through the geographic area of study are not included. This approach is consistent with the concept used for the IX and XI trips. Therefore, the XX VMT would be assigned to other areas that are generating the trips.

The Full Accounting Method was utilized to develop the VMT estimates for unincorporated Los Angeles County because it more fully accounts for the length of regional travel generated in unincorporated Los Angeles County, not just the travel occurring on unincorporated Los Angeles County's in-boundary roadways. As noted above, the inventory includes emissions from trips that begin and/or end within unincorporated Los Angeles County. It does not include through trips that neither begin nor end within the unincorporated areas. Daily VMT is then multiplied by 347 to

²¹ VMT estimates for large urban areas are commonly developed using regional travel demand models. These models are developed and periodically updated, calibrated, and validated for use in long range infrastructure planning, environmental impact assessments, and air quality conformity analyses by local and regional agencies. Trip-based travel forecasting models generate (output) daily vehicle trips for each TAZ across various trip purposes based on inputs such as the transportation network and socioeconomic data such as population, household, and employment. SCAG staff maintain a regional travel demand model that uses a four-step model process to arrive at a set of forecast vehicle trips based on the data described above.

calculate annual VMT.²² VMT was estimated for passenger vehicles (light-duty cars and trucks) and trucks (medium- and heavy-duty trucks).

Emissions were calculated using CARB's Emission FACTors 2021 model (EMFAC2021).²³ EMFAC2021 generates vehicle emission rates by area, year, vehicle type, fuel type, speed, and other parameters. EMFAC2021 was run for Los Angeles County for 2015 and 2018 in "emission rate" mode to generate vehicle travel emission factors for all vehicle types and fuel types for aggregated (average) speeds. The EMFAC vehicle type categories were aligned with the two categories of VMT provided by Fehr & Peers (passenger and truck).²⁴ The EMFAC emission factors by vehicle type and fuel assigned to passenger VMT and truck VMT were then weighted using Countywide VMT and trip generation profiles for each vehicle type modeled in EMFAC2011.²⁵ GHG emissions were then calculated by multiplying the weighted emission factors for passenger vehicles and trucks by the origin-destination VMT for passenger vehicles and trucks supplied by Fehr & Peers.

Data Sources:

- 2016 SCAG Regional Travel Demand Model
Provided by SCAG
- Fehr & Peers Modeling Analysis (July 29, 2019; December 2021; January 2022; February 2023)
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>

ON ROAD TRANSPORTATION: BUSES

GHG emissions from fuel and energy consumption by bus transit systems and paratransit agencies are accounted from Federal Transit Administration's (FTA) National Transit database at the Countywide level (not for unincorporated Los Angeles County areas separately).²⁶ The agency included in the GHG inventory includes the Los Angeles County Metropolitan Transportation Authority (Metro). Electricity consumption was not available from the National Transit database. To account for electricity consumption and associated indirect GHG emissions, the total gasoline and diesel fuel use from the National Transit database was reapportioned based on the percentage of VMT by fuel type (diesel, gasoline, natural gas, electricity) from EMFAC2021 for the aggregated OBUS, SBUS, and UBUS categories in EMFAC. The CPA Clean emission factor is applied to all electricity consumption by electric buses serving unincorporated Los Angeles County areas. Emission factors for gasoline, diesel, and compressed natural (CNG) gas-powered buses are taken from EMFAC2021 to calculate CO₂ and N₂O emissions. Total estimated Countywide GHG emissions were then scaled by Metro ridership forecasts for unincorporated county areas to estimate GHG emissions for the unincorporated Los Angeles County areas.²⁷

²² The annualization factor of 347 was provided by Fehr & Peers to estimate annual vehicle activity based on daily vehicle activity generated by SCAG's 2016 Regional Travel Demand Model.

²³ CARB, EMFAC2021 Model. Version v.1.0.1. 2021. Available at: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

²⁴ The "passenger vehicle" category corresponds to EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MD. The "trucks" category corresponds to EMFAC vehicle categories LHDT1, LHDT2, MHDT, HHDT, and MH.

²⁵ For example, if the LDA vehicle type represents 70% of VMT at an emission rate of 300 grams CO₂ per mile and the LDT1 vehicle type represents 30% of VMT at an emission rate of 350 grams CO₂ per mile, the VMT-weighted emission rate for LDA and LDT1 vehicles combined is calculated as follows: 70% * 300 + 30% * 350 = 315 grams CO₂ per mile.

²⁶ FTA, National Transit Database. 2018. Available at: <https://www.transit.dot.gov/ntd/ntd-data>. Accessed January 2021.

²⁷ Metro, Interactive Estimated Ridership Stats. 2021. Available at: <https://isotp.metro.net/MetroRidership/Index.aspx>. Accessed January 2021.

Data Sources:

- FTA National Transit Database
Link: <https://www.transit.dot.gov/ntd/ntd-data>
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>
- Metro Bus Ridership
Link: <https://isotp.metro.net/MetroRidership/Index.aspx>

RAILWAY

Diesel fuel and electricity consumed by commuter rail systems are obtained from FTA's NTD.²⁸ The database reports diesel fuel consumption by Southern California Regional Rail Authority (Metrolink) and electricity consumption by Metro Rail. GHG emission factors for diesel locomotives were obtained from the EPA national GHG inventory and emission factors for electric propulsion were obtained from the EPA's Emissions & Generation Resource Integrated Database (eGRID).²⁹ These emission factors were multiplied by the diesel fuel and electricity consumption values obtained from NTD to generate GHG emissions for Los Angeles County as a whole. Total Countywide GHG emissions were then scaled based on Metro and Metrolink ridership forecasts for unincorporated county areas to estimate GHG emissions for the unincorporated Los Angeles County areas.

Data Sources:

- FTA National Transit Database
Link: <https://www.transit.dot.gov/ntd/ntd-data>
- EPA National GHG Inventory Emission Factors
Link: https://www.epa.gov/sites/production/files/2015-12/documents/emission-factors_nov_2015.pdf
- EPA eGRID Database
Link: <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid>
- Metro Ridership
Link: http://media.metro.net/projects_studies/union_station/images/LAUSMP_Presentation_2013_0315.pdf

²⁸ FTA, National Transit Database. 2018. Available at: <https://www.transit.dot.gov/ntd/ntd-data>. Accessed January 2021.

²⁹ EPA, eGRID. 2018. Available at: <https://www.epa.gov/egrid>. Accessed January 2021.

Waste and Wastewater

Emissions generated at landfills, biological treatment (composting and anaerobic digestion) and incineration facilities, and wastewater treatment plants are reported under the waste sector. These subsectors are discussed in more detail below. **Table A-3** presents scopes, activity data, and emissions for the water and wastewater sector. **Figure A-3** compares 2015 and 2018 GHG emissions from waste and wastewater by sub-sector.

Table A-3: Waste and Wastewater Scope, Activity, and GHG Emissions by Sub-sector

		2015 INVENTORY		2018 INVENTORY	
CATEGORY	SCOPE	ACTIVITY	EMISSIONS (MTCO ₂ E)	ACTIVITY	EMISSIONS (MTCO ₂ E)
Waste and Wastewater					
Solid Waste Disposal	1 & 3	Disposal Tonnage: 721,493 tons	404,604	Disposal Tonnage: 935,512 tons	407,578
Biological Treatment of Solid Waste	1 & 3	Composting Tonnage: 51,111 tons	10,214	Composting Tonnage: 27,182 tons	5,309
Waste Incineration*	1 & 3	Incineration Tonnage: 3,303 tons	1,184	Incineration Tonnage: 1,876 tons	547
Wastewater Treatment	All	Population: 1,058,871	55,179	Population: 1,082,365	56,495
TOTAL			469,997		469,382

NOTE: Totals exclude Waste Incineration which is accounted for under Stationary Energy

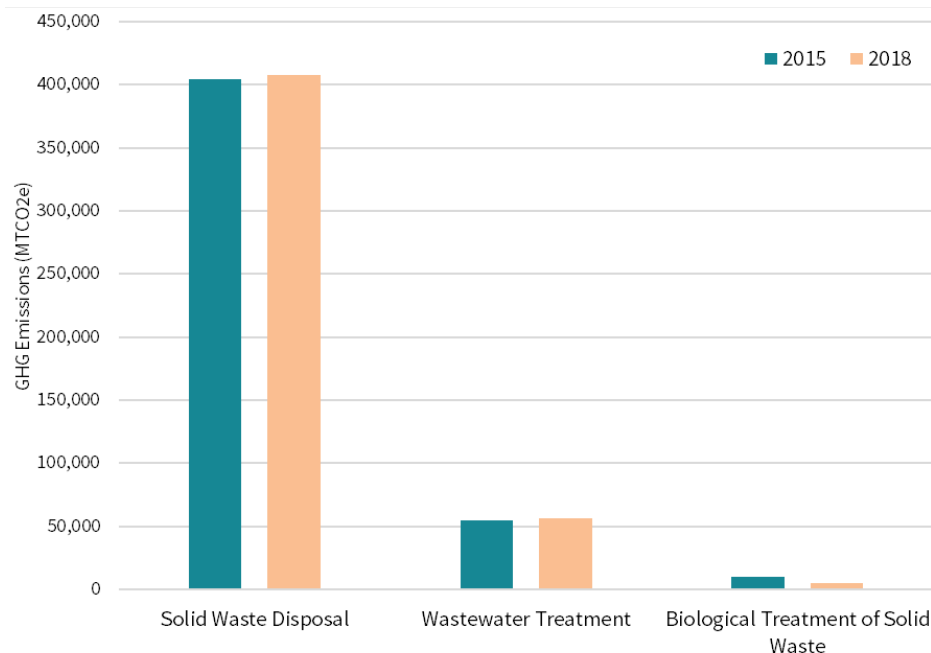


Figure A-3: 2015 & 2018 Waste and Wastewater Emissions by Sub-sector

SOLID WASTE DISPOSAL

Landfill-related emissions are estimated using CARB's first order of decay (FOD) model,³⁰ based on waste disposal tonnage and composition data from CalRecycle's Solid Waste Integrated System (SWIS)³¹ and County Public Works Solid Waste Information Management System (SWIMS) reports.³² Using these reports, unincorporated Los Angeles County disposal tonnage data were obtained for 62 open and closed landfills where unincorporated Los Angeles County residents and businesses disposed their municipal solid waste prior to 2018.

Most of the 62 in- and out-of-county landfills used by unincorporated Los Angeles County residents and businesses have landfill gas collection (LFG) systems with combustion control. These systems collect LFG for flaring, energy production, or for producing liquefied natural gas (LNG), CNG, and producer gas. GHG emissions from landfill gas collection are estimated based on LFG collection rate, LFG flow to energy, and methane content from CalRecycle's 2010 Landfill Gas Master.³³ To determine Los Angeles County's share of methane removal at these landfills (since many other jurisdictions contribute waste to these same landfills), total emissions from these landfills were apportioned based on waste disposed in the landfills by Los Angeles County versus California. California's disposal tonnage data are obtained using CalRecycle's SWIS reports for statewide disposal at the same facilities, where unincorporated Los Angeles County residents and businesses deposited municipal solid waste between 1998 and 2018. The same was done to estimate the unincorporated Los Angeles County's share of emissions at these landfills.

GHG emissions from landfills and landfill gas flaring for the unincorporated Los Angeles County are scaled based on waste volume directed to in- and out-of-county landfills between 1998 and 2018. Emissions associated with methane flaring and recovery from landfills are reported under the waste sector. However, if the methane is recovered (via biogas or digester gas) and used for electricity generation, then the emissions are reported under the stationary energy sector as waste-to-energy facilities or biomass and auxiliary power facilities.

Data Sources:

- CARB FOD Model
Link: <https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool>
- CalRecycle SWIS Reports
Link: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search>
- LADPW SWIMS Reports
Link: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>
- CalRecycle Landfill Gas Master
Link: <https://www2.calrecycle.ca.gov/PublicNotices/Documents/1642>

³⁰ CARB, Landfill Gas Tool. 2021. Available at: <https://ww2.arb.ca.gov/resources/documents/carbs-landfill-gas-tool>. Accessed January 2021.

³¹ CalRecycle, SWIS Facility/Site Search. 2021. Available at: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search>. Accessed January 2021.

³² LADPW, Solid Waste Information Management System (SWIMS). 2021. Available at: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>. Accessed January 2021.

³³ CalRecycle, Landfill Gas Master. Available at: <https://www2.calrecycle.ca.gov/PublicNotices/Documents/1642>. Accessed January 2021.

BIOLOGICAL TREATMENT OF SOLID WASTE

Biological treatment of solid waste refers to the composting and anaerobic digestion of organic waste (such as food waste, garden and park waste, sludge, and other organic waste sources).

Composting

In 2018, the County diverted waste to eight in-county and over 50 out-of-county composting facilities. Waste volume diverted by unincorporated Los Angeles County areas for composting was obtained from County Public Works SWIMS reports for transfer stations and non-disposal facilities.³⁴ Waste composted at in-county facilities is assumed to be equivalent to annual waste processing capacity of in-county facilities. These data are obtained from 2019 Organics Waste Management Reports by County Department of Public Works. Waste composted at out-of-county facilities is considered to be the difference between total waste diverted and capacity of in-county facilities. GHG emissions are calculated using wet and dry waste parameters based on waste composition disposed at in and out-of-county recycling or diversion facilities. These data are obtained from Public Works Organics Waste Management Reports.³⁵ GHG emissions from composting for unincorporated Los Angeles County are scaled based on waste volume directed to in- and out-of-county facilities in 2018.

Anaerobic Digestion

The Joint Water Pollution Control Plant (JWPCP) serves 78 Cities as well as many unincorporated communities, also manages sewage sludge using Anaerobic Digester Units. Annual waste volume processed at these facilities is obtained from 2019 Organics Waste Management Reports by Public Works.³⁶ GHG emissions produced by this facility are estimated based on content of volatile solids in food waste and sewage sludge processed in respective facilities.

GHG emissions from anaerobic digestion facilities for unincorporated Los Angeles County are scaled based on population of unincorporated areas in 2018 compared to the total Countywide population. Since the JWPCP facility uses biogas or digester gas for energy production, emissions from anaerobic digestion are included under the waste sector for informational purposes, but they are reported under stationary energy (energy industries).

Data Sources:

- LADPW SWIMS Reports
Link: <https://dpw.lacounty.gov/epd/swims/>
- Public Works 2019 Organics Waste Management Reports
Link: <https://dpw.lacounty.gov/epd/swims/News/swims-more-links.aspx?id=4>

WASTE INCINERATION

Incineration is a controlled industrial process which is often paired with energy recovery. In 2018, the County diverted waste to three waste incineration facilities. Two of the facilities – the Commerce Refuse-to-Energy Facility (discontinued in June 2018) and the Southeast Resource Recovery Facility – are located in the county. Additionally, waste was diverted to Covanta

³⁴ LADPW, Solid Waste Information Management System (SWIMS). 2021. Available at: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>. Accessed January 2021.

³⁵ Ibid

³⁶ Ibid

Stanislaus Inc., which is an out-of-county facility. GHG emissions from these facilities are obtained from CARB's MRR GHG database.³⁷

To estimate unincorporated Los Angeles County's emissions, total countywide GHG emissions from waste incineration facilities are scaled based on waste diverted by unincorporated communities to these facilities in 2018. CalRecycle's 2018 SWIS reports are used to determine the waste volume diverted to these facilities.³⁸ Since these facilities are used for energy production, emissions are reported under stationary energy (energy industries).

Data Sources:

- CARB MRR Database
Link: <https://ww2.arb.ca.gov/mrr-data>
- CalRecycle SWIS Reports
Link: <https://www2.calrecycle.ca.gov/swfacilities/Directory/>

WASTEWATER TREATMENT

Emissions from wastewater treatment are estimated based on population served by sewer and septic systems in unincorporated areas. GHG emissions from wastewater treatment are estimated based on 2018 population data from the SCAG Growth and Forecast report.³⁹ Parameters and constants such as total organic carbon and protein consumption in wastewater are obtained from California GHG inventory documentation⁴⁰ and IPCC default parameters.⁴¹

Data Sources:

- SCAG Growth and Forecast Report
Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>
- California GHG Inventory
Link: <https://ww2.arb.ca.gov/ghg-inventory-data>
- IPCC Default Parameters
Link: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_2_Ch2_Waste_Data.pdf

Industrial Processes and Product Use

Emissions from the industrial processes and product use (IPPU) sector include HFC and PFC emissions from products such as refrigerants, foams, aerosols and fossil fuel-based lubricants and solvents are estimated by scaling statewide emissions from the product use category. Statewide GHG emissions from product use in residential, commercial, and transportation sectors are scaled based on unincorporated Los Angeles County's population.⁴² State-level HFC and PFC emissions from product use in industries including electronics, food processing, metal and

³⁷ CARB, Mandatory GHG Reporting Regulations. April 1, 2019. Available at: <https://ww2.arb.ca.gov/mrr-regulation>. Accessed January 2021

³⁸ CalRecycle, SWIS Facility/Site Search. 2021. Available at: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search>. Accessed January 2021.

³⁹ SCAG, Growth Forecasting. 2018. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

⁴⁰ CARB, GHG Inventory Data Archive. 2021. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

⁴¹ IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2: Waste Generation, Composition and Management Data. 2006. Available at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_2_Ch2_Waste_Data.pdf. Accessed March 2022.

⁴² CARB, GHG Inventory Data Archive. 2021. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

machinery manufacturing, and others, are scaled based on state and unincorporated Los Angeles County industry output from respective industries and unincorporated Los Angeles County's population.⁴³ Impact Analysis For Planning (IMPLAN) data were used to tabulate the economic outputs by industry for Los Angeles County and the State of California, to estimate the emissions from industry sectors including the lime, cement, and nitrogenous fertilizer manufacturing sectors. GHG emissions are further adjusted based on HFC prohibitions for both Senate Bill 1013 and the CARB HFC Regulation by assuming that the use of prohibited HFCs are phase out over 30 years from prohibition date for all HFC policies before 2018.⁴⁴ **Table A-4** presents scopes, activity data, and emissions for the IPPU sector.

Table A-4: IPPU Scope, Activity, and GHG Emissions

2015 INVENTORY				2018 INVENTORY	
CATEGORY	SCOPE	ACTIVITY	EMISSIONS (MTCO ₂ E)	ACTIVITY	EMISSIONS (MTCO ₂ E)
IPPU					
Product Use	1	Aerosols & fire retardants, residential & transportation refrigeration and air conditioning, foam use, industrial refrigeration and air conditioning, and non-aerosol solvents Population: 1,114,808	253,529	Aerosols & fire retardants, residential & transportation refrigeration and air conditioning, foam use, industrial refrigeration and air conditioning, and non-aerosol solvents Population: 1,082,365	239,505
TOTAL			253,529		239,505

Data Sources:

- California GHG Inventory
Link: <https://www.arb.ca.gov/cc/inventory/pubs/pubs.htm>
- HFC Prohibitions
Link: <https://ww2.arb.ca.gov/resources/fact-sheets/hydrofluorocarbon-hfc-prohibitions-california>
- SCAG Growth and Forecast Report
Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>
- IMPLAN Data (proprietary)⁴⁵

⁴³ SCAG, Growth Forecasting. 2018. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

⁴⁴ CARB, HFC Prohibitions in California. November 29, 2018. Available at: <https://ww2.arb.ca.gov/resources/fact-sheets/hydrofluorocarbon-hfc-prohibitions-california>. Accessed January 2021.

⁴⁵ Impact Analysis For Planning (IMPLAN) data contain 546 sectors representing all private industries in the United States (anything from grain farming to surgical appliance manufacturing) as defined by the North American Industry Classification System (NAICS) codes. Employment, employee compensation, industry expenditures, commodity demands, relationships between industries, and more are collected to form IMPLAN's ever-growing database. For more information, see: <https://www.implan.com/data/>.

Agriculture, Forestry, and Other Land Use

The AFOLU sector accounts for emissions from land-related changes and includes agriculture, forestry and aggregate sources (including biomass burning and fertilizer use). This sector also includes emissions from forest land conversion. Urban tree canopy and land cover statistics were tabulated by the California Center for Sustainable Communities at the University of California, Los Angeles (UCLA) Institute of Environment and Sustainability, using a tree canopy analysis developed by TreePeople and the University of Vermont with 2014 Los Angeles Region Imagery Acquisition Consortium (LARIAC) land cover data. Based on historic land conversion data from 2007-2016, approximately 212 hectares of forest land is converted to urban land each year in unincorporated county areas. The conversion of a single hectare results in a one-time emission of 169 MTCO₂e; this value was multiplied by 212 to estimate total annual land conversion emissions.⁴⁶

This sector does not include natural carbon sequestration and storage in the unincorporated Los Angeles County's natural lands, working lands, and urban forests because these sinks are part of the natural carbon cycle and are not anthropogenic emissions sources. Further, forest sinks are not currently included in CARB's statewide inventory or SB 32's statewide GHG emission reduction target for 2030.^{47,48} The statewide GHG inventory includes the "AB 32 GHG Inventory Sectors," which are anthropogenic emissions sources, a framework that is consistent with international and national GHG inventory practices and is aligned with requirements in AB 32.⁴⁹ CARB accounts for the exchange of ecosystem carbon between the atmosphere and the plants and soils in land, which includes forest sinks, in the Natural and Working Lands Ecosystem Carbon Inventory, which also includes the amount of carbon impacted by wildfire.⁵⁰ The 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan), for the first time, incorporates the contribution of natural and working lands (NWL) to the state's GHG emissions, as well as their role in achieving carbon neutrality by 2045 as mandated by AB 1279.⁵¹ However, the 2045 CAP's target of reducing emissions 85 percent below 1990 levels by 2045 aligns with the AB 1279 statewide target of reducing *anthropogenic* emissions to 85 percent below 1990 levels by 2045. Neither this statewide target nor the 2045 CAP's target incorporate emissions and sinks from the NWL sectors.^{52,53} Achieving the County's aspirational goal of carbon neutrality by 2045 may include a full accounting of natural carbon sequestration and storage in unincorporated Los Angeles County's natural lands in a future update to the 2045 CAP. The County may consider strategies to increase natural carbon removals through land management activities that prioritize restoring and enhancing ecosystem functions to improve resilience to climate change impacts, including more stable carbon stocks.

⁴⁶ NASS, CropScape. 2021. Available at: <https://nassgeodata.gmu.edu/CropScape/>. Accessed January 2021.

⁴⁷ Moreno, Adam. Lead Natural and Working Lands Climate Scientist. California Air Resources Board. Email correspondence with ESA on November 15, 2021.

⁴⁸ CARB, *California Greenhouse Gas Emissions for 2000 to 2020 Trends of Emissions and Other Indicators*. October 26, 2022. Available at: <https://ww2.arb.ca.gov/ghg-inventory-data>. Accessed February 2023.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ CARB, *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022. Available at: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan>. Accessed February 2023.

⁵² Ibid.

⁵³ It should be noted that the statewide target of carbon neutrality by 2045 includes NWL sectors, and the state's CO₂ capture and removal target of 100 million MTCO₂e by 2045 must compensate for any residual emissions from the AB 32 GHG Inventory sectors and NWL emissions to support achieving carbon neutrality.

Emissions from biomass burning (post-harvest agricultural burning) and fertilizer use (including liming, urea, organic and synthetic fertilizer) are reported under aggregate sources. Emissions from post-harvest biomass burning (barley, corn, wheat and almond) in unincorporated areas are estimated using 2016 cropland area from NASS CropScape⁵⁴ and relevant emission factors from the CARB 2000-2019 California GHG inventory.⁵⁵

Emissions from fertilizer use for agriculture in Los Angeles County are estimated based on California Department of Food and Agriculture (CDFA) annual reports and scaled for unincorporated areas using 2016 cropland area from NASS CropScape.⁵⁶ **Table A-5** presents scopes, activity data, and emissions for the AFOLU sector. **Figure A-4** shows the contribution of each subsector to the AFOLU sector for both the 2015 and 2018 inventories.

Table A-5: AFOLU Scope, Activity, and GHG Emissions by Sub-sector

2015 INVENTORY				2018 INVENTORY	
CATEGORY	SCOPE	ACTIVITY	EMISSIONS (MTCO ₂ E)	ACTIVITY	EMISSIONS (MTCO ₂ E)
AFOLU					
Land Use Change	1	Total Forest Land Area: 52,498 acres ^a Forest Land Conversion: -212 hectares/year Urban Tree Canopy: 11,938 hectares ^a	35,811	Total Forest Land Area: 52,498 acres ^a Forest Land Conversion: -212 hectares/year Urban Tree Canopy: 11,938 hectares ^a	35,811
Aggregate Sources and Non-CO2 Emissions Sources	1	Biomass Burning (Crops): 61 acres Liming: 152 tons Urea Application: 1,026 tons Managed Soils: 5,374 tons	25,048	Biomass Burning (Crops): 61 acres Liming: 152 tons Urea Application: 1,026 tons Managed Soils: 5,374 tons	25,048
TOTAL			60,860		60,860

NOTES:

^a. Forest land area and urban tree canopy cover data are reported for informational purposes only. These data are not used to generate emissions sinks for inclusion in the GHG inventories.

⁵⁴ NASS, CropScape. 2021. Available at: <https://nassgeodata.gmu.edu/CropScape/>. Accessed January 2021.

⁵⁵ CARB, GHG Inventory Data Archive. 2021. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021

⁵⁶ CDFA, California Agricultural Statistics Review 2015-2016. 2016. Available at: <https://www.cdfa.ca.gov/statistics/PDFs/2016Report.pdf>. Accessed January 2021.

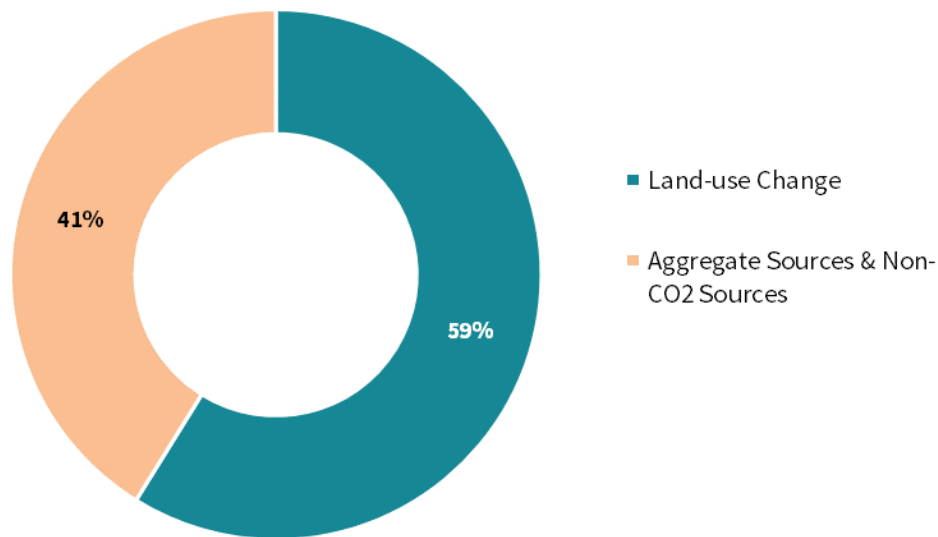


Figure A-4: 2015 & 2018 AFOLU Emissions by Sub-sector

Data Sources:

- NASS CropScape
Link: <https://nassgeodata.gmu.edu/CropScape/>
- CDFA, California Agricultural Statistics Review 2015-2016
Link: <https://www.cdfa.ca.gov/statistics/PDFs/2016Report.pdf>
- TreePeople, Los Angeles County Tree Canopy Map Viewer
Link: <https://www.treepeople.org/los-angeles-county-tree-canopy-map-viewer/>
- California GHG Inventory
Link: <https://www.arb.ca.gov/cc/inventory/pubs/pubs.htm>
- GIS analysis by UCLA Institute of Environmental Studies
Link: <https://lacounty.maps.arcgis.com/home/search.html?q=CURes%40lmu.edu&restrict=false>

Summary Emissions

Table A-6 presents total GHG emissions for all sectors and subsectors in the 2015 and 2018 GHG inventories. **Figure A-5** compares the 2015 and 2018 inventories with a sector breakdown.

Table A-6: GHG Emissions by Sector and Sub-sector

CATEGORY	2015 EMISSIONS (MTCO ₂ E)	2018 EMISSIONS (MTCO ₂ E)
Transportation	2,838,133	2,704,685
Passenger Vehicles	2,797,360	2,665,824
Buses	31,360	29,371
Railway	9,413	9,490
Stationary Energy	1,908,637	1,698,809
Residential Buildings	1,030,285	962,743
Commercial, Institutional, and Agricultural Buildings	386,753	349,373
Manufacturing and Construction Buildings	309,449	244,417
Energy Industries	121,252	98,554
Fugitive Emissions from Oil and Natural Gas Systems	58,222	41,066
Agriculture, Forestry and Other Fishing Activities	2,675	2,658
Waste and Wastewater	469,997	469,382
Solid Waste Disposal	404,604	407,578
Biological Treatment of Solid Waste	10,214	5,309
Waste Incineration*	1,184	547
Wastewater Treatment	55,179	56,495
IPPU	253,529	239,505
Product Use	253,529	239,505
AFOLU	60,860	60,860
Land Use Change	35,811	35,811
Aggregate Sources and Non-CO ₂ Emissions Sources	25,048	25,048
TOTAL	5,531,155	5,173,240

NOTE: Waste and Wastewater totals exclude Waste Incineration which is accounted for under Stationary Energy.

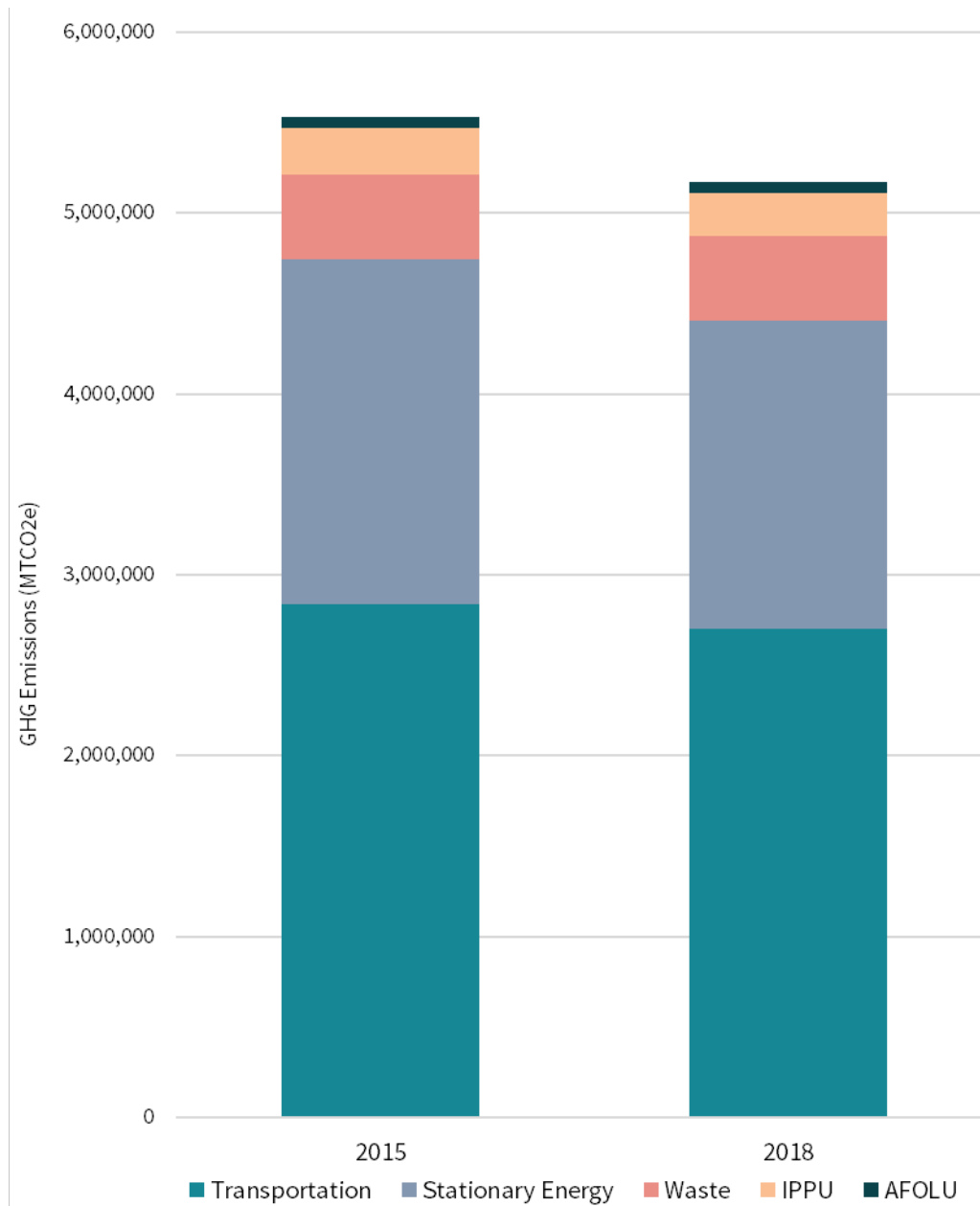


Figure A-5: 2015 and 2018 Emissions Inventory Comparison by Sector

A.2 1990 and 2010 Greenhouse Gas Inventory and Backcasting Methods

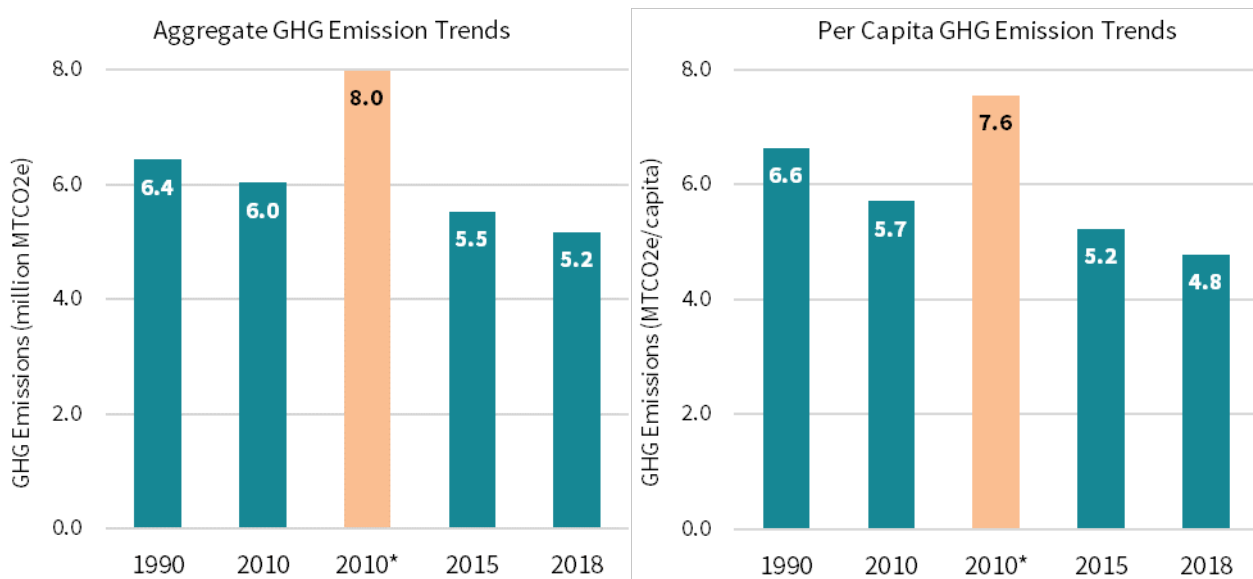
In 2015, the Los Angeles Regional Collaborative (LARC) and ICF International created a GHG emissions inventory for unincorporated Los Angeles County using the 2013 ICLEI U.S. Community Protocol.⁵⁷ The 2010 inventory accounted for Scope 1 and 2 emissions using AR4 GWP values. Additionally, Scope 3 emissions were estimated for additional sub-categories—including water conveyance, and water supply, treatment and distribution—that are not accounted for in the 2015 and 2018 GHG inventories. The 2015 and 2018 GHG emissions inventory methods follow the GPC protocol, as discussed above. The 2015 and 2018 inventories include GHG emissions from industrial processes, product use, fugitive emissions from oil and natural gas systems, and other aggregate carbon dioxide sources that were not included in the 2010 inventory. **Table A-7** shows the differences in sub-sectors included in the two protocols and respective inventories.

Table A-7: Sectors and Sub-sectors in ICLEI and GPC Protocol

2013 ICLEI US COMMUNITY PROTOCOL USED FOR 2010 INVENTORY	2019 GPC PROTOCOL USED FOR 2015 AND 2018 INVENTORY
<ul style="list-style-type: none"> • Transportation <ul style="list-style-type: none"> ○ On-Road Transportation ○ Off-Road Transportation and Equipment 	<ul style="list-style-type: none"> • Transportation <ul style="list-style-type: none"> ○ On-Road Transportation ○ Off-Road Transportation ○ Railways
<ul style="list-style-type: none"> • Building Energy • Stationary Sources 	<ul style="list-style-type: none"> • Stationary Energy <ul style="list-style-type: none"> ○ Buildings ○ Energy Industries ○ Agriculture, Forestry and Other Fishing Activities ○ Fugitive Emissions from Oil and Natural Gas Systems
<ul style="list-style-type: none"> • Solid Waste • Wastewater Treatment 	<ul style="list-style-type: none"> • Waste <ul style="list-style-type: none"> ○ Solid Waste ○ Biological Treatment of Solid Waste ○ Waste Incineration ○ Wastewater Treatment
<ul style="list-style-type: none"> • Agriculture (including livestock management) • Urban and Natural Forests (for informational purposes only) 	<ul style="list-style-type: none"> • AFOLU <ul style="list-style-type: none"> ○ Land and Land-use Change (including Urban and Natural Forests) ○ Aggregate sources and non-CO2 emission sources
<ul style="list-style-type: none"> • Water Conveyance • Water Supply, Distribution and Treatment (for informational purposes only) 	<ul style="list-style-type: none"> • IPPU <ul style="list-style-type: none"> ○ Product use

⁵⁷ ICLEI – Local Governments for Sustainability USA, *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions*, Version 1.1, July 2013.

Due to differences in the two GHG protocols and accounting methods used for the 2010 inventory and the 2015 and 2018 inventories, it is not possible to directly compare emissions from each sector and sub-sector. To monitor emissions reduction between 2010 and 2015/2018 and to ensure consistency with previous County commitments (dating back to 1990), the GPC protocol was used to develop a backcasting model for unincorporated Los Angeles County's emissions. GHG emissions from each sector and sub-sector were scaled from 2015 to 1990 by using County and state parameters and datasets discussed in **Table A-8** below. Using the backcasting model, it is estimated that GHG emissions in 2015 are eight percent lower than 2010 and 14 percent lower than 1990. However, per-capita GHG emissions in 2015 are nine percent lower than 2010 and 21 percent lower than 1990 despite the increase in population, as illustrated in **Figure A-6**. 2018 emissions are estimated to be 14 percent below 2010 emissions and 20 percent below 1990 emissions; per-capita GHG emissions in 2018 are estimated to be 16 percent below 2010 emissions and 28 percent below 1990 emissions, illustrating a substantial decline in total emissions both at the aggregate level and at the per-capita level.



* 2010 GHG emissions inventory reported in unincorporated Los Angeles County 2020 CCAP.

Figure A-6: 1990 to 2018 GHG Emissions Trends

Table A-8: Assumptions for Backcasting GHG Emissions to 2010 and 1990

SECTOR/SUB-SECTOR	BACKCASTING PARAMETERS
Transportation	3,450,566 (1990); 3,015,442 (2010)
On-Road Transportation	<ul style="list-style-type: none"> • VMT from on-road vehicles are estimated by interpolating VMT in unincorporated Los Angeles County for the years 2016 and 2040 as reported by Fehr & Peers using SCAG's 2016 regional travel demand model. • Emission factors for on-road vehicles (including passenger vehicles, trucks, and buses) are estimated by linearly interpolating EMFAC2021 emission rates from 2000-2020 to extrapolate emission rates to 1990.
Railways	GHG emissions are assumed to be constant from 1990 to 2015.
Stationary Energy	2,226,141 (1990); 2,146,743 (2010)
Residential Buildings	Emissions from energy use in residential buildings are backcasted based on Countywide residential natural gas and electricity consumption as reported by CEC from 1990 to 2014.
Commercial and Institutional Buildings	Emissions from energy use in commercial buildings are backcasted based on Countywide non-residential natural gas and electricity consumption as reported by CEC from 1990 to 2014.
Manufacturing and Construction: Buildings	Emissions from energy use in commercial buildings are backcasted based on Countywide non-residential natural gas and electricity consumption as reported by CEC from 1990 to 2014.
Manufacturing and Construction: Equipment	<ul style="list-style-type: none"> • 2015 emissions from stationary equipment are scaled down using countywide GHG emissions based on construction and manufacturing jobs in unincorporated Los Angeles County. • GHG emissions are assumed to be constant from 1990 to 2015.
Energy Industries	GHG emissions for 1990-2010 are estimated as the average of reported emissions from 2011-2017.
Agriculture, Forestry and Other Fishing Activities	GHG emissions are assumed to be constant from 1990 to 2015.
Fugitive Emissions from Oil and Natural Gas Systems	GHG emissions are assumed to be constant from 1990 to 2015.
Waste	511,965 (1990); 564,503 (2010)
Solid Waste Disposal	<ul style="list-style-type: none"> • Emissions from organic waste disposal between 2010 and 2014 are scaled based on waste disposal tonnage reported by PW's SWIMS database. • GHG emissions from 1990 to 2009 are backcasted based on population.
Biological Treatment of Solid Waste	<ul style="list-style-type: none"> • Emissions from biological treatment between 2010 and 2014 are scaled based on waste disposal tonnage reported by PW's SWIMS database. • GHG emissions from 1990 to 2009 are backcasted based on population.
Waste Incineration	GHG emissions are assumed to be constant from 1990 to 2015.
IPPU	173,534 (1990); 243,456 (2010)
Product Use*	GHG emissions from 1990 to 2014 are backcasted based on population.
AFOLU	25,048 (1990); 60,860 (2010)
Land-use Change	Average land conversion rates from 2006-2015 were used to estimate emissions back to 2006. Emissions were assumed to be zero from 1990-2006.
Aggregate Sources and Non-CO ₂ Emissions Sources	GHG emissions are assumed to be constant from 1990 to 2015.

A.3 2018 to 2045 Business-as-Usual Forecasts

This section describes the approach for modeling business-as-usual (BAU) emissions, which represents future emissions based on current population and regional growth trends, land use growth patterns, and regulations or policies introduced before the 2018 baseline year. The BAU scenario demonstrates the growth in GHG emissions that would occur if no further action were to be taken by the County, the State of California, or the federal government after 2018.

The BAU forecast serves as a reference point for other forecasting scenarios, which include the Adjusted BAU that incorporates federal, state, and local actions (see CAP Appendix B: Adjusted Business-as-Usual Forecast and Emission Reduction Methods) and the GHG reductions from CAP implementation (see CAP Appendix B: GHG Reduction Measures and Actions). This section describes the BAU projections by sector, which are based on growth trends including current population and regional economic growth projections.

Additional details on the assumptions for each sector are included in the sections below.

Figure A-7 presents population and employment projections for unincorporated Los Angeles County from 2015 to 2045.

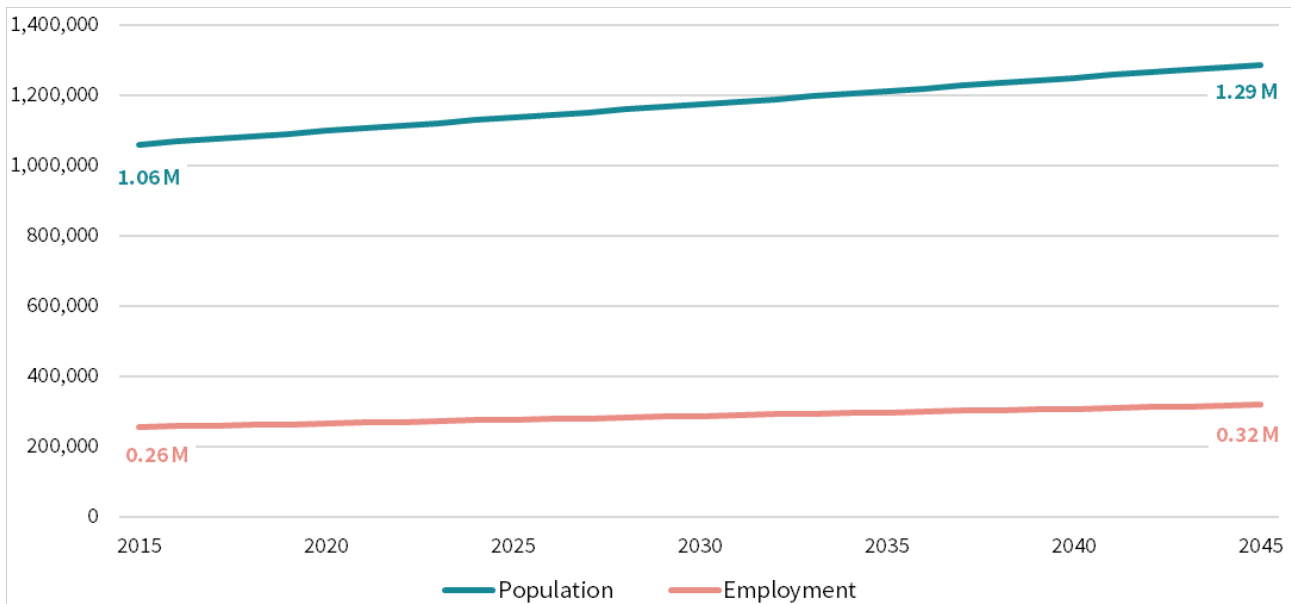


Figure A-7: Unincorporated Los Angeles County Population and Employment Projections

Stationary Energy

Table A-9 presents emissions for 2018 along with the BAU forecast for 2030, 2035, and 2045 for the stationary energy sector.

Table A-9: Stationary Energy GHG Emissions – 2018 Inventory and BAU Forecasts

STATIONARY ENERGY SUBSECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Residential Buildings	962,743	869,099	889,314	944,823
Commercial, Institutional, and Agricultural Buildings	349,373	429,107	441,191	469,816
Manufacturing and Construction Buildings	244,417	301,729	309,350	324,331
Energy Industries	98,554	29,495	29,526	29,587
Fugitive Emissions from Oil and Natural Gas Systems	41,066	49,130	49,251	49,493
Agriculture, Forestry and Other Fishing Activities	2,658	2,600	2,580	2,562
TOTAL	1,698,809	1,681,160	1,721,212	1,820,612

Residential Buildings

Energy consumption (electricity and natural gas) in residential buildings is forecasted based on building footprint projections for residential building stock in unincorporated Los Angeles County. Building footprint projections are based on historical trends from the County Assessor Parcel Database (2006-2018).⁵⁸ In 2019, residential customers in unincorporated Los Angeles County were enrolled in CPA's Clean Power rate option (50 percent eligible renewable), leading to an initial decline in residential building emissions through 2025, before they rise in 2030, 2035, and 2045 alongside population and economic growth. For purposes of the BAU projections it is assumed that CPA customers in unincorporated areas continue to receive 50 percent eligible renewable electricity until 2045 and the remaining customers continue to receive electricity from SCE with the emissions factors and participation rates held constant. GHG emissions in 2019 are calculated using 2018 natural gas and electricity emission factors with 2019 CPA participation rates. GHG emissions between 2020-2045 are calculated using 2020 electricity emission factors.

Data Sources:

- SCE Emission Factor
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission Factor
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report (July 28, 2021)
Provided by CPA via County CSO
- Climate Registry Information System (CRIS)
Link: [https://cris4.org/\(S\(zr3twbbnour5a5jfb1iykcxa\)\)/frmLILogin.aspx](https://cris4.org/(S(zr3twbbnour5a5jfb1iykcxa))/frmLILogin.aspx)
- UCLA analysis of County Parcel Assessor's Data
Provided by UCLA Institute of Environmental Studies

⁵⁸ UCLA Institute of Environmental Studies, Analysis of County Parcel Assessor's Data. 2018.

Commercial and Institutional Buildings

Energy consumption in commercial, institutional, and agricultural buildings is forecasted based on building footprint projections for non-residential building stock in unincorporated Los Angeles County. Commercial and Institutional building footprint projections are based on historical trends from the County Assessor Parcel Database (2006-2018). In June 2018, non-residential customers in unincorporated Los Angeles County were enrolled in CPA's Clean Power option. Under this program, over 95 percent of non-residential customers started receiving 50 percent eligible renewable electricity from CPA. For purposes of the BAU projections it is assumed that CPA customers in unincorporated areas continue to receive 50 percent eligible renewable electricity until 2045 and the remaining customers continue to receive electricity from SCE with the emissions factors and participation rates held constant. GHG emissions in 2019 are calculated using 2018 natural gas and electricity emission factors with 2019 CPA participation rates. GHG emissions between 2020-2045 are calculated using 2020 electricity emission factors. GHG emissions from agricultural buildings are assumed to remain constant.

Data Sources:

- SCE Emission Factor
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission Factor
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymx3rurxtg4))/frmLILogin.aspx)
- UCLA analysis of County Parcel Assessor's Data
Provided by UCLA Institute of Environmental Studies

Manufacturing and Construction Buildings

ELECTRICITY AND NATURAL GAS

Energy consumption (electricity and natural gas) in manufacturing and industrial buildings is forecasted based on building footprint projections for non-residential building stock in unincorporated Los Angeles County. Building footprint projections are based on historical trends from the County Assessor Parcel Database (2006-2018).⁵⁹ In June 2018, non-residential customers in unincorporated Los Angeles County were enrolled in CPA's Clean Power option. Under this program, over 95 percent of non-residential customers started receiving 50 percent eligible renewable electricity from CPA. For purposes of the BAU projections it is assumed that CPA customers in unincorporated areas continue to receive 50 percent eligible renewable electricity until 2045 and the remaining customers continue to receive electricity from SCE with the emissions factors and participation rates held constant. GHG emissions in 2019 are calculated using 2018 natural gas and electricity emission factors with 2019 CPA participation rates. GHG emissions between 2020-2045 are calculated using 2020 electricity emission factors.

OFF-ROAD EQUIPMENT

Countywide GHG emissions from off-road equipment used in the manufacturing and construction sector are obtained from CARB's OFFROAD2017 ORION tool.⁶⁰ The tool provides countywide

⁵⁹ UCLA Institute of Environmental Studies, Analysis of Los Angeles County Parcel Assessor's Data. 2018.

⁶⁰ CARB, OFFROAD ORION. 2018. Available at: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools>. Accessed January 2021.

carbon dioxide emissions and annual gasoline and diesel consumption by off-road equipment to 2045. Emission projections for unincorporated Los Angeles County are estimated by scaling Countywide emissions using construction and manufacturing jobs in 2017 for unincorporated Los Angeles County areas.

Data Sources:

- CARB OFFROAD2017 ORION
Link: <https://www.arb.ca.gov/orion/>
- Jobs in Manufacturing and Construction
Link: <https://scag.ca.gov/sites/main/files/file-attachments/losangelescountyp.pdf?1605653130>
- UCLA analysis of County Parcel Assessor's Data
Provided by UCLA Institute of Environmental Studies

Energy Industries

Emission projections from energy production at CHP plants, district cooling facilities, biomass power stations, and waste-to-energy facilities, are extrapolated based on 2008 to 2020 GHG emissions reported by the CARB Pollution Mapping Tool and the CARB 2021 MRR Database.⁶¹ For CHP facilities, emissions for Pitchess cogeneration station were assumed to remain constant (the facility was decommissioned in 2018); emissions for Olive View cogeneration station were forecasted using a linear trend in emissions from reported 2012-2020. Waste-to-energy facility biogenic emissions for 2019-2029 were forecasted using a linear trend in emissions reported from 2011-2018 and emission for 2030-2045 were forecasted assuming the Calabasas landfill shuts down and the remaining emissions decline following the trend from 2011 through the forecasting year. Biomass and auxiliary power facility biogenic emissions were forecasted using a linear trend in emissions reported from 2011-2018.

Data Sources:

- CARB Pollution Mapping Tool
Link: https://www.arb.ca.gov/ei/tools/pollution_map/
- CARB MRR Database
Link: <https://ww2.arb.ca.gov/mrr-data>

Agriculture, Forestry and Other Fishing Activities

Countywide GHG emissions from agricultural equipment are obtained from CARB's OFFROAD2017 ORION tool. The tool provides countywide carbon dioxide emissions and annual gasoline and diesel consumption by off-road equipment to 2045. Emission projections for unincorporated Los Angeles County are estimated by scaling Countywide emissions using 2016 crop acreage for unincorporated Los Angeles County from USDA's NASS Cropscape database.⁶²

Data Sources:

- CARB OFFROAD2017 ORION
Link: <https://www.arb.ca.gov/orion/>
- USDA NASS Cropscape
Link: <https://nassgeodata.gmu.edu/CropScape/>

⁶¹ CARB, Mandatory GHG Reporting Regulations. April 1, 2019. Available at: <https://ww2.arb.ca.gov/mrr-regulation>. Accessed January 2021.

⁶² NASS, CropScape. 2021. Available at: <https://nassgeodata.gmu.edu/CropScape/>. Accessed January 2021.

Fugitive Emissions from Oil and Natural Gas Systems

Emissions from extraction, processing, and distribution of crude oil and natural gas, are extrapolated based on 2008 to 2018 GHG emissions reported by the CARB Pollution Mapping Tool.⁶³

Data Sources:

- CARB Pollution Mapping Tool
Link: https://www.arb.ca.gov/ei/tools/pollution_map/

Transportation

Table A-10 presents emissions for 2018 along with the BAU forecast for 2030, 2035, and 2045 for the transportation sector.

Table A-10: Transportation GHG Emissions – 2018 Inventory and BAU Forecasts

TRANSPORTATION SUBSECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Passenger Vehicles	2,665,824	2,738,675	2,769,029	2,829,737
Buses	29,371	35,589	35,676	35,852
Railways	9,490	10,255	10,389	10,658
TOTAL	2,704,685	2,784,518	2,815,094	2,876,247

On-road Transportation: Passenger Vehicles and Trucks

VMT from passenger vehicles and trucks were estimated using SCAG's 2016 Regional Travel Demand Model, which forecasts VMT for the year 2040. This model is a trip-based travel forecasting model that generates daily vehicle trips for each TAZ across various trip purposes based on inputs such as the transportation network and socioeconomic data such as population, household, and employment. VMT was provided by F&P for years 2016 and 2040 and was linearly interpolated for 2030 and 2035. VMT for years 2041 through 2045 were linearly extrapolated based on the 2016 to 2040 VMT projection.

GHG emissions from unincorporated areas are calculated using VMT and the weighted emission factors for 2018 by vehicle type (passenger vehicles and trucks)⁶⁴ from the EMFAC2021 model (see transportation section of A.1 above for discussion).⁶⁵ The 2018 emission factor was applied to every year from 2018 through 2045 to represent no changes in the vehicle fleet due to federal, state, or local action.

It should be noted that the transportation modeling for the 2045 CAP shows a five percent decrease in transportation emissions between 2015 and 2018. This decrease is due to declining emission factors from the EMFAC2021 model, which outpace the increase in total VMT as

⁶³ CARB, Pollution Mapping Tool. 2018. Available: https://www3.arb.ca.gov/ei/tools/pollution_map/. Accessed January 2021.

⁶⁴ Passenger vehicles correspond to EMFAC categories LDA, LDT1, LDT2, MCY, and MD. Trucks correspond to EMFAC categories LHDT1, LHDT2, MHDT, HHDT, and MH.

⁶⁵ CARB, EMFAC2021 Model. 2021. Available at: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

modeled with SCAG's 2016 Regional Travel Demand Model. The California Department of Tax and Fee Administration reports that statewide taxable sales of gasoline and diesel fuel increased by two percent from 2015 to 2018.⁶⁶ This increase is also consistent with the statewide GHG inventory prepared by CARB, which also shows a two percent increase in total on-road transportation emissions from 2015 to 2018.⁶⁷ Statewide gasoline and diesel fuel sales may not trend precisely with unincorporated Los Angeles County gasoline and diesel fuel sales, and VMT apportioned to unincorporated Los Angeles County areas may not correlate perfectly with gasoline sales, which could explain the difference. In addition, the VMT used in the inventory is based on the SCAG model, not actual reported VMT or fuel sales data, consistent with the GPC Protocol.

Data Sources:

- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>
- SCAG Regional Travel Demand Model
Provided by SCAG
- Fehr & Peers Modeling Analysis (July 29, 2019; December 2021; January 2022; February 2023)

On-road Transportation: Buses

Emissions for 2015 and 2018 were calculated using fuel consumption data from FTA's NTD⁶⁸ and standard emission factors for diesel, gasoline, and compressed natural gas from EMFAC2021.⁶⁹ Emissions from Metro buses are extrapolated from 2018 through 2045 based on Metro's bus miles and ridership statistics between 2010 and 2017.⁷⁰

Data Sources:

- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>
- Metro Bus Ridership
Link: <https://isotp.metro.net/MetroRidership/Index.aspx>
- FTA National Transit Database
Link: <https://www.transit.dot.gov/ntd/ntd-data>

Railways

Emissions by Southern California Regional Rail Authority (SCRRA or Metrolink) are forecasted based on projected weekday ridership until 2025 as documented in Metrolink's 10 Year Strategic Plan. Emissions from 2025 to 2045 are extrapolated based ridership estimates between 2014 and

⁶⁶ California Energy Commission, California Retail Fuel Outlet Annual Reporting (CEC-A15) Results. 2022. Available at: [California Retail Fuel Outlet Annual Reporting \(CEC-A15\) Results](#). Accessed April 2022.

⁶⁷ California Air Resources Board, Data used to generate figures in the California Greenhouse Gas Emissions for 2000 to 2019- Trends of Emissions and Other Indicators report. Figure 3. 2022. Available at: <https://ww2.arb.ca.gov/ghg-inventory-data>. Accessed April 2022.

⁶⁸ FTA, National Transit Database. 2018. Available at: <https://www.transit.dot.gov/ntd/ntd-data>. Accessed January 2021.

⁶⁹ CARB, EMFAC2021 Model. 2021. Available at: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

⁷⁰ Metro, Interactive Estimated Ridership Stats. 2021. Available at: <https://isotp.metro.net/MetroRidership/Index.aspx>. Accessed January 2021.

2025. Emissions from Metro Rail are extrapolated based on Metro rail miles and ridership statistics between 2010 and 2017.⁷¹

Data Sources:

- Metrolink Strategic Plan
Link: https://www.metroinktrains.com/globalassets/about/metroink_10-year_strategic_plan_2015-2025.pdf
- Metro Ridership
Link: <http://isotp.metro.net/MetroRidership/Index.aspx>

Waste and Wastewater

BAU emissions are forecasted for years 2018 through 2045 for emissions generated at landfills, biological treatment (composting and anaerobic digestion) and incineration facilities, and wastewater treatment plants are reported under the waste sector. **Table A-11** presents emissions for 2018 along with the BAU forecast for 2030, 2035, and 2045 for the waste and wastewater sector.

Table A-11: Waste and Wastewater GHG Emissions – 2018 Inventory and BAU Forecast

WASTE & WASTEWATER SUBSECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Solid Waste Disposal	407,578	386,285	386,541	410,702
Biological Treatment of Solid Waste	5,309	6,180	6,184	6,579
Waste Incineration*	547	647	687	711
Wastewater Treatment	56,495	59,454	61,372	65,208
TOTAL	469,382	451,919	454,097	482,489

NOTE: Totals exclude Waste Incineration which is accounted for under Stationary Energy

Solid Waste Disposal

Emissions from landfills are determined by extrapolating the 2018 GHG emissions intensity (MTCO₂e/person) based on solid waste and organic waste disposal projections from the Public Works SWIMS database⁷² and population projections by SCAG⁷³ and Caltrans.⁷⁴ Solid waste diversion rate and organics diversion rate are assumed to remain constant at 70 percent and 38 percent respectively, as is the future methane capture rates at all landfills.

Data Sources:

- LADPW SWIMS Database
Link: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>
- SCAG Population Projections
Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>

⁷¹ FTA, National Transit Database. 2018. Available at: <https://www.transit.dot.gov/ntd/ntd-data>. Accessed January 2021.

⁷² LADPW, Solid Waste Information Management System (SWIMS). 2021. Available at: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>. Accessed January 2021.

⁷³ SCAG, Growth Forecasting. 2018. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

⁷⁴ Caltrans, California County-Level Economic Forecast 2017-2050. September 2017. Available at: <https://www.shastaedc.org/wp-content/uploads/2018/07/CalTrans-2017-2050.pdf>. Accessed January 2021.

- Caltrans Population Projections

Link: <https://www.shastaedc.org/wp-content/uploads/2018/07/CalTrans-2017-2050.pdf>

Biological Treatment of Solid Waste

Emissions from composting and anaerobic digestion are estimated by extrapolating the 2018 GHG emissions intensity (MTCO₂e/person) based on solid waste and organic waste disposal projections from Public Works SWIMS database.⁷⁵ Solid waste diversion rate and proportion of organic waste diverted from landfills to composting and grinding/mulching facilities remains constant.

GHG emissions from Anaerobic Digestion at JWPCP are scaled based on population growth from 2018 to 2045. These emission projections are reported under Energy Industries.

Data Sources:

- LADPW SWIMS Database

Link: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>

Waste Incineration

See Energy Industries.

Wastewater Treatment

Emissions from wastewater treatment are determined by extrapolating the 2018 GHG emissions intensity (MTCO₂e/person) based on population projections by SCAG⁷⁶ and Caltrans.⁷⁷

Data Sources:

- SCAG Population Projections

Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>

- Caltrans Population Projections

Link: <https://www.shastaedc.org/wp-content/uploads/2018/07/CalTrans-2017-2050.pdf>

Industrial Processes and Product Use

HFC and PFC emissions from the use of foam, solvents and industrial refrigerants, aerosols, fire retardants and refrigerants in residential and transportation sectors are extrapolated based on population projections by SCAG⁷⁸ and Caltrans.⁷⁹ It is assumed that per capita emissions from products remain constant between 2018 to 2045. **Table A-12** presents emissions for 2018 along with the BAU forecast for 2030, 2035, and 2045 for the IPPU sector.

⁷⁵ LADPW, Solid Waste Information Management System (SWIMS). 2021. Available at: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>. Accessed January 2021.

⁷⁶ SCAG, Growth Forecasting. 2018. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

⁷⁷ Caltrans, California County-Level Economic Forecast 2017-2050. September 2017. Available at: <https://www.shastaedc.org/wp-content/uploads/2018/07/CalTrans-2017-2050.pdf>. Accessed January 2021.

⁷⁸ SCAG, Growth Forecasting. 2018. Available at: <https://scag.ca.gov/data-tools-geographic-information-systems>. Accessed January 2021.

⁷⁹ Caltrans, California County-Level Economic Forecast 2017-2050. September 2017. Available at: <https://www.shastaedc.org/wp-content/uploads/2018/07/CalTrans-2017-2050.pdf>. Accessed January 2021.

Table A-12: IPPU GHG Emissions – 2018 Inventory and BAU Forecast

SECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
IPPU	239,505	259,605	267,981	284,731
TOTAL	239,505	259,605	267,981	284,731

Data Sources:

- SCAG Population Projections
Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>
- Caltrans Population Projections
Link: <https://www.shastaedc.org/wp-content/uploads/2018/07/CalTrans-2017-2050.pdf>

AFOLU

GHG Emissions are assumed to be constant between 2018 to 2045. **Table A-13** presents emissions for 2018 along with the BAU forecast for 2030, 2035, and 2045 for the AFOLU sector.

Table A-13: AFOLU GHG Emissions – 2018 Inventory and BAU Forecast

SECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
AFOLU	60,860	60,860	60,860	60,860
TOTAL	60,860	60,860	60,860	60,860

Summary Emissions

Table A-14 and **Figure A-8** present GHG emissions for all sectors for the 2018 GHG inventory and the 2030, 2035, and 2045 BAU forecasts.

Table A-14: GHG Emissions by Sector – 2018 Inventory and BAU Forecast

SECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Stationary Energy	1,698,809	1,681,160	1,721,212	1,820,612
Transportation	2,704,685	2,784,518	2,815,094	2,876,247
Waste	469,382	451,919	454,097	482,489
IPPU	239,505	259,605	267,981	284,731
AFOLU	60,860	60,860	60,860	60,860
TOTAL	5,173,240	5,238,062	5,319,243	5,524,939

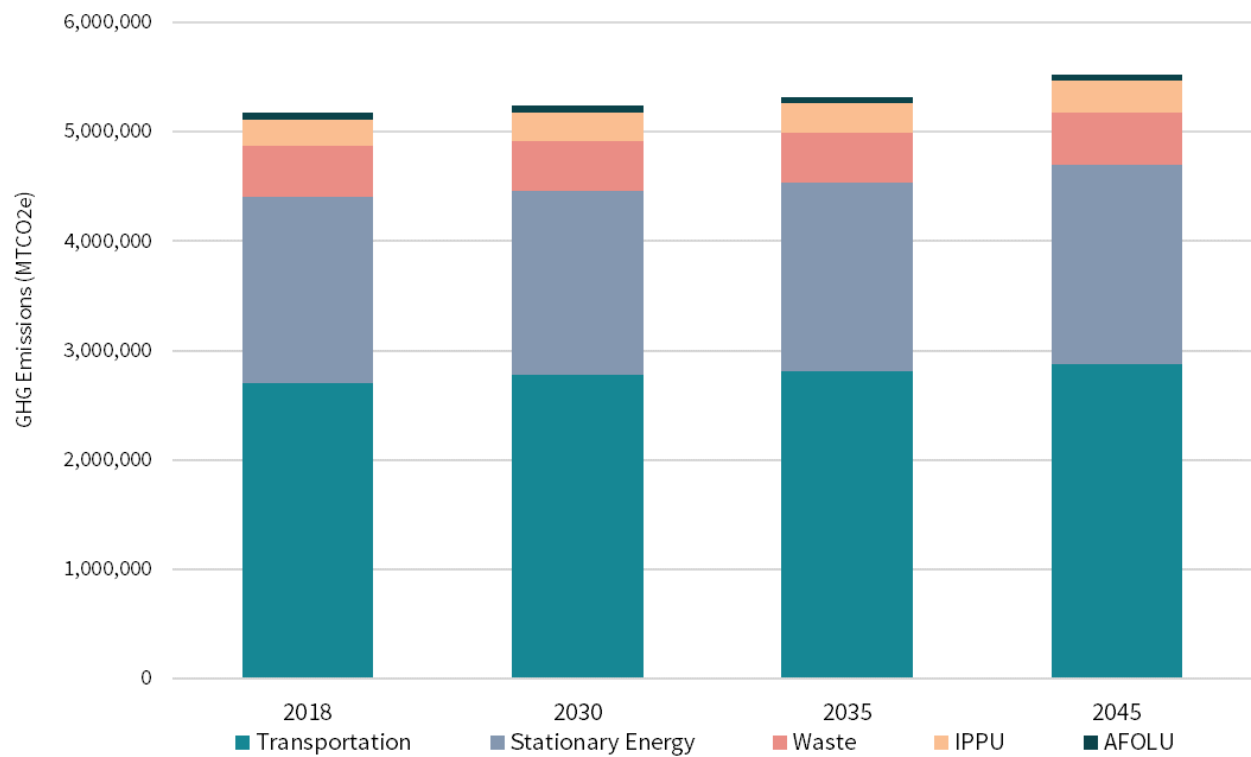


Figure A-8: GHG Emissions by Sector – 2018 Inventory and BAU Forecast

A.4 Derivation of the 2045 CAP's Emission Reduction Targets

Origin of Emission Reduction Targets

The 2045 CAP includes three separate targets and one aspirational goal for three future milestone years:

- By 2030, reduce unincorporated Los Angeles County GHG emissions 40 percent below 2015 baseline levels;
- By 2035, reduce unincorporated Los Angeles County GHG emissions 50 percent below 2015 baseline levels;
- By 2045, reduce unincorporated Los Angeles County GHG emissions 83 percent below 2015 baseline levels; and
- By 2045, achieve carbon neutrality in unincorporated Los Angeles County (long-term aspirational goal).

The 2045 CAP's targets and 2045 aspirational goal are based on the OurCounty Sustainability Plan and CARB's 2022 Scoping Plan. A primary objective of the 2045 CAP is to align with the OurCounty Sustainability Plan targets and state targets. The OurCounty Sustainability Plan conducted a community-wide, Countywide greenhouse gas emissions inventory. That process resulted in individual greenhouse gas inventories for all 88 cities and the unincorporated areas of Los Angeles County. At the time of the OurCounty Plan's preparation, 2015 was the year with the most up-to-date data for all 88 cities and the unincorporated areas, including account-level energy consumption data from the UCLA Energy Atlas. Thus, the OurCounty Plan used 2015 as the baseline year against which to set the Plan's greenhouse gas related targets. During the development of the OurCounty Plan, the County evaluated a series of GHG reduction target options. The targets selected represent the County's commitment to doing its fair share to help California achieve its ambitious statewide GHG targets.

In 2005, Governor Arnold Schwarzenegger's Executive Order (EO) S-3-05 established the 2050 statewide GHG reduction target of 80 percent below 1990 levels, expressing the intent of the State of California to address the issue of climate change by reducing GHGs. Following EO S-3-05, the California legislature passed Assembly Bill 32 (AB 32, Health and Safety Code § 38500, et seq.) in 2006. AB 32 requires the CARB to design and implement feasible and cost-effective emissions limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). In 2015, Governor Edmund G. Brown, Jr.'s EO B-30-15 established the 2030 statewide GHG reduction target of 40 percent below 1990 levels. In 2016, Senate Bill (SB) 32 and its companion bill AB 197 amended the Health and Safety Code by establishing a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure the benefits of state climate policies accrue to disadvantaged communities. Further, in 2018, Governor Brown signed EO B-55-18, committing California to total, economy-wide carbon neutrality by 2045. In December 2017, CARB approved the 2017 Climate Change Scoping Plan Update (2017 Scoping

Plan), which outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels as codified by SB 32.⁸⁰

In August 2022, the California Legislature enacted a package of significant climate legislation that included a codification of the state’s goal to reach net-zero GHG emissions by 2045. With the passage of AB 1279, California is committed to reach net zero by no later than 2045. Critically, this goal requires California to cut anthropogenic GHG emissions by 85 percent compared to 1990 levels, ensuring that the state uses all available solutions to sharply cut GHG emissions from industrial facilities, vehicles, power plants, and more. Governor Gavin Newsom signed AB 1279 into law on September 16, 2022.

On December 15, 2022, CARB adopted the 2022 Scoping Plan in response to AB 1279 and other legislation.⁸¹ The 2022 Scoping Plan lays out a path to achieve carbon neutrality no later than 2045 and to reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve the following: significant reductions in fossil fuel combustion by deploying clean technologies and fuels; further reductions in short-lived climate pollutants; support for sustainable development; increased action on natural and working lands to reduce emissions and sequester carbon; and the capture and storage of carbon.⁸² Appendix D of the 2022 Scoping Plan includes recommendations for local government actions to align with the state’s climate goals, focusing on local GHG emissions reduction strategies.⁸³ According to CARB, “local government actions are crucial for supporting attainment of the state’s climate goals” and local government leadership is “critical to implementing State-level measures to address GHG emissions associated with transportation and the built environment.”

Table A-15 outlines the state’s GHG reduction targets.

The 2045 CAP retains OurCounty’s target for 2035 and identifies OurCounty’s 2045 carbon neutrality target as a long-term aspirational goal. The 2045 CAP adds a new GHG emission reduction target for 2030 to align with SB 32.⁸⁴ The Draft 2045 CAP’s 2030 target was selected based on guidance provided in the 2017 Scoping Plan and was developed to demonstrate consistency with the statewide 2030 target shown in Table A-15, above. The Draft 2045 CAP’s 2030 target is established based on a reduction from 2015 baseline levels (just like the OurCounty targets for 2025 and 2035) and is equal to 40 percent below 2015 emissions or 4.9 million MTCO₂e. This compares to unincorporated Los Angeles County’s 2030 BAU forecast of 5.2 million MTCO₂e, as presented in Table A-14 above. A 40 percent reduction below 2015 levels

⁸⁰ California Air Resources Board, *California’s 2017 Climate Change Scoping Plan: The Strategy for Achieving California’s 2030 Greenhouse Gas Target*. November 2017. Available at: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2017-scoping-plan-documents>. Accessed January 2022.

⁸¹ California Air Resources Board, *Resolution 22-21: 2022 Climate Change Scoping Plan for Achieving Carbon Neutrality*. Agenda Item No. 22-16-1. December 15, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/barcu/board/res/2022/res22-21.pdf>. Accessed December 2022.

⁸² California Air Resources Board, *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022. Available: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>. Accessed December 2022.

⁸³ California Air Resources Board, *2022 Scoping Plan for Achieving Carbon Neutrality, Appendix D Local Actions*. November 16, 2022. Available: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>. Accessed December 2022.

⁸⁴ The 2045 CAP excludes OurCounty’s 2025 target because implementation of the CAP will barely be underway by 2025. Instead, the 2045 CAP focuses on the closest reasonable target timeframes of 2030 and 2035, and also to align with state planning for 2030 (SB 32 does not stipulate an interim target for 2025).

is also equivalent to a 48 percent reduction below unincorporated Los Angeles County's 1990 GHG emissions levels, which is more stringent than the state target of a 40 percent reduction below 1990 levels by 2030 (for additional discussion, see section below).

Table A-15: State of California Greenhouse Gas Emission Reduction Targets

TARGET YEAR	STATE GHG TARGET	CORRESPONDING STATE LEGISLATION
2020	1990 levels	Assembly Bill 32, the California Global Warming Solutions Act (2006)
2030	40% below 1990 levels	Senate Bill 32, the Global Warming Solutions Act (2006)
2045	85% below 1990 levels and net zero GHG emissions ^a	Assembly Bill 1279, the California Climate Crisis Act (2022) ^b

NOTES:

^a. Net zero means that emissions of GHGs to the atmosphere are balanced by removals of greenhouse gases (GHGs) over a period of time, as determined by the California Air Resources Board. In other words, it means that GHG emissions generated by sources such as transportation, power plants, and industrial processes must be less than or equal to the amount of carbon dioxide that is removed from the atmosphere, both in natural sinks (such as trees) and through mechanical sequestration (such as direct air capture), over the same time period.

^b. Executive Order S-3-05 (2005) set a target of 80% below 1990 levels, which was superseded by Assembly Bill 1279.

The Draft 2045 CAP's 2035 target was selected based on guidance provided in both the 2017 Scoping Plan and the 2022 Scoping Plan and was chosen as a milestone target to put unincorporated Los Angeles County on the trend to achieve the 2045 CAP's 2045 target and the long-term aspirational goal of carbon neutrality by 2045. This 2035 target was developed to demonstrate consistency with the pathway needed to achieve the statewide 2045 targets shown in Table 2-4, above. The Draft 2045 CAP's 2035 target is established based on a reduction from 2015 baseline levels and is equal to 50 percent below 2015 emissions (2.8 million MTCO₂e). This compares to unincorporated Los Angeles County's 2035 BAU forecast of 5.3 million MTCO₂e. A 50 percent reduction below 2015 levels is also equivalent to a 57 percent reduction below unincorporated Los Angeles County's 1990 GHG emissions levels.

The Draft 2045 CAP's target for 2045 was selected based on guidance for CAP targets provided in the 2022 Scoping Plan and was developed to demonstrate consistency with the statewide 2045 target shown in Table A-15, above. It is based on a reduction from 2015 baseline levels and is equal to 83 percent below 2015 emissions (958,000 MTCO₂e). This compares to unincorporated Los Angeles County's 2045 BAU forecast of 5.5 million MTCO₂e. An 83 percent reduction below 2015 levels is also equivalent to an 85 percent reduction below unincorporated Los Angeles County's 1990 GHG emissions levels, which in turn is equivalent to the state target of an 85 percent reduction below 1990 levels by 2045. **Table A-16** presents a comparison between the 2045 CAP's targets for 2030 and 2035, along with its aspirational 2045 goal, and the OurCounty Sustainability Plan targets for each future milestone year.

Table A-16: GHG Emissions Targets and Goals for the Draft 2045 Cap and OurCounty Sustainability Plan

YEAR	2045 CAP (UNINCORPORATED COUNTY ONLY)	OURCOUNTY SUSTAINABILITY PLAN (UNINCORPORATED COUNTY AND CITIES)	GHG EMISSIONS (MTCO ₂ E) (UNINCORPORATED COUNTY)
2025	n/a	25% below 2015 baseline levels	4,148,366
2030	40% below 2015 levels	n/a	3,318,693
2035	50% below 2015 levels	50% below 2015 levels	2,765,578
2045	83% below 2015 levels (85% below 1990 levels) Carbon neutrality ^a	Carbon neutrality by 2045 for county operations (by 2050 countywide)	958,088

NOTE:

^a. The Draft 2045 CAP includes an aspirational goal, rather than a target, of carbon neutrality by 2045.

The Targets as Levels of Significance for GHG Impacts under CEQA

CEQA Guidelines Section 15183.5(b) stipulates that project-specific environmental documents can find that project-level GHG emissions are not cumulatively considerable if the project complies with the requirements of a qualified GHG emissions reduction plan. As discussed in the Draft Environmental Impact Report for the 2045 CAP, upon certification of the EIR and approval of the 2045 CAP, the 2045 CAP would meet the requirements of a qualified GHG emission reduction plan per CEQA Guidelines Section 15183.5(b)(1) for projects through 2035.

To meet the requirements of CEQA Guidelines Section 15183.5(b), a qualified GHG emissions reduction plan must include several important elements, and must:

Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable (§ 15183.5(b)(1)(B)).

The Draft 2045 CAP identifies a GHG emissions reductions target for the year 2030 that is 40 percent below baseline 2015 levels, which is equivalent to 47 percent below 1990 levels. This 2030 target for unincorporated Los Angeles County is therefore more stringent than the statewide target of 40 percent below 1990 levels by 2030 pursuant to SB 32. The Draft 2045 CAP's 2035 target of 50 percent below 2015 levels puts unincorporated Los Angeles County on a pathway to achieve the Draft CAP's 2045 target and the statewide 2045 target in AB 1279. The Draft 2045 CAP's 2045 target of 83 percent below 2015 levels is equivalent to an 85 percent reduction below 1990 levels, which aligns with the State of California's target of 85 percent below 1990 levels. The 2045 CAP's long-term aspirational goal of carbon neutrality by 2045 is also consistent with AB 1279 and the 2035 target puts unincorporated Los Angeles County on a path to achieve carbon neutrality.

Consistency with State Target as a Threshold of Significance

While several state-level initiatives will help reduce GHG emissions, they alone will not be sufficient to meet the 2030 target mandated by SB 32. This is one of the many reasons why the

County has prepared the 2045 CAP: so it can contribute its fair share of emission reductions to achieve the statewide targets for 2030 and beyond.

Consistency with the CARB 2022 Scoping Plan and the state's statutory GHG emissions reduction targets is an appropriate metric by which to determine the significance of the Draft 2045 CAP's GHG emissions. CEQA Guidelines Section 15064.4(b)(3) states that a lead agency "may consider a project's consistency with the state's long-term climate goals or strategies" when determining the significance of a project's impacts. Additionally, in *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal.4th 204 (Newhall), the California Supreme Court sanctioned the use of such a threshold: The Court stated that assessing a project's GHG impacts based on a "consistency with a GHG emission reduction plan" threshold of significance is legally permissible under CEQA.

The 2030 unincorporated Los Angeles County target above is derived using the 2017 Scoping Plan's recommendations for local land use development to contribute their "fair share" of emission reductions to the statewide GHG target for 2030. This is also consistent with the Association of Environmental Professionals (AEP) 2016 white paper recommendation for "Substantial Progress" thresholds for land use development to show consistency with statewide targets.⁸⁵ As discussed above, the Draft 2045 CAP's 2030 target of 40 percent below 2015 levels (a gross emissions target) exceeds the statewide 2030 target as codified in SB 32 and the 2017 Scoping Plan. Unincorporated Los Angeles County's emissions in 2015 are estimated to be 12 percent lower than 1990 emissions;⁸⁶ this compares to statewide emissions that were 2.3 percent higher in 2015 compared to 1990.⁸⁷ Additionally, unincorporated Los Angeles County's emissions in 2018 are estimated to be 20 percent lower than 1990 emissions; this compares to statewide emissions that were 1.3 percent lower in 2018 compared to 1990.⁸⁸ In other words, unincorporated Los Angeles County has been more successful than the state as a whole in reducing gross emissions since 1990. Consequently, the Draft 2045 CAP's gross emissions target is *more* stringent than the corresponding state target when comparing to 1990 levels and approximately equivalent when using a per-capita metric.⁸⁹ The Draft 2045 CAP's 2030 target also sets unincorporated Los Angeles County on a path to achieve California's 2045 GHG emission reduction target in AB 1279.

The Draft 2045 CAP's 2045 target of 83 percent below 2015 levels aligns with the statewide 2045 target, as codified in AB 1279 and implemented in the 2022 Scoping Plan. This is because the County's 2045 target of 85 percent below 2015 levels is equivalent to an 85 percent reduction below 1990 levels, which aligns with the State of California's target of 85 percent below 1990

⁸⁵ Association of Environmental Professionals (AEP). 2016, *Final White Paper - Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*, October 18. Available at: https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf. Accessed December 2021.

⁸⁶ To demonstrate consistency with statewide targets, to assess unincorporated Los Angeles County's progress since 1990, and to ensure that interim emissions reduction targets align with commitments prior to 2015, a backcasting model was developed (see section A.2 of this appendix).

⁸⁷ California Air Resources Board, *California's Greenhouse Gas Inventory by Scoping Plan Category*, Fourteenth Edition: 2000 to 2019, Last updated on 6/1/2021. Available at: <https://ww2.arb.ca.gov/ghg-inventory-data>. Accessed January 2022.

⁸⁸ Ibid.

⁸⁹ Per-capita emissions for unincorporated Los Angeles County are 19 percent lower in 2015 (6.1 MTCO₂e/capita) compared to 1990 (7.6 MTCO₂e/capita) and 28 percent lower in 2018 (5.4 MTCO₂e/capita) compared to 1990. This compares to total statewide per-capita emissions that were 22 percent lower in 2015 (11.3 MTCO₂e/capita) compared to 1990 (14.5 MTCO₂e/capita) and 26 percent lower in 2018 (10.8 MTCO₂e/capita) compared to 1990. The 2030 statewide target of 6.2 MTCO₂e/capita is 57 percent below 1990 statewide levels, whereas the 2045 CAP's 2030 target of 3.3 MTCO₂e/capita is 56 percent below 1990 unincorporated Los Angeles County levels.

levels. Consequently, the Draft 2045 CAP's target is equivalent to the state target. The Draft 2045 CAP's 2045 target also sets unincorporated Los Angeles County on a trend to achieve California's 2045 carbon neutrality target. Consequently, pursuant to CEQA Guidelines Section 15064.4(b)(3), the Draft 2045 CAP's 2045 target represents the level below which GHG emissions would not be cumulatively considerable through the year 2045.

The Draft 2045 CAP's 2035 target of 50 percent below 2015 levels puts unincorporated Los Angeles County on a pathway to achieve the statewide 2045 targets as stipulated in AB 1279. Although the state does not have a target for 2035, the 2045 CAP's target for 2035 of 50 percent below 2015 levels is equivalent to a 57 percent reduction below 1990 levels, which puts unincorporated Los Angeles County on a path to achieve its 2045 targets. Consequently, pursuant to CEQA Guidelines Section 15064.4(b)(3), the Draft 2045 CAP's 2035 target represents the level below which GHG emissions would not be cumulatively considerable through the year 2035.

The Draft 2045 CAP's 2045 aspirational goal of carbon neutrality aligns with the statewide 2045 target of carbon neutrality stipulated in AB 1279.

GHG emissions and global climate change represent cumulative impacts of human activities and development projects locally, regionally, statewide, nationally, and worldwide. GHG emissions from all these sources cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects around the world have contributed and will continue to contribute to global climate change and its associated environmental impacts. Given that analysis of GHG emissions is cumulative in context, the emissions targets discussed above represent the level by which the 2045 CAP's emissions are not cumulatively considerable.

A.5 Attachment A: Fehr & Peers Modeling Analysis

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Municipality	Population	Employment	Households	VMT			VMT/Pop
				Passenger Vehicles	Trucks	Total	
Agoura Hills	17,213	8,583	6,123	442,037	21,155	463,192	26.9
Alhambra	84,588	29,241	29,811	1,426,758	49,235	1,475,992	17.4
Arcadia	60,011	28,122	20,762	1,402,860	33,072	1,435,932	23.9
Artesia	16,729	5,135	4,594	278,165	7,187	285,352	17.1
Azusa	50,536	12,779	13,821	844,038	33,752	877,790	17.4
Baldwin Park	75,978	16,374	17,326	1,161,967	47,226	1,209,193	15.9
Bell	35,813	12,572	8,890	519,548	26,990	546,538	15.3
Bell Gardens	42,365	9,644	9,672	594,605	15,347	609,953	14.4
Bellflower	77,365	13,823	23,731	1,025,913	25,807	1,051,720	13.6
Beverly Hills	35,009	60,367	15,197	1,408,370	43,550	1,451,920	41.5
Bradbury	1,340	264	534	25,624	780	26,404	19.7
Burbank	105,798	112,893	43,456	3,024,950	158,610	3,183,560	30.1
Calabasas	19,438	16,703	7,149	694,145	38,848	732,992	37.7
Carson	94,163	64,283	26,404	2,243,675	173,475	2,417,150	25.7
Cerritos	49,668	31,305	15,613	1,385,832	67,064	1,452,896	29.3
Claremont	38,437	18,921	12,926	957,338	20,186	977,524	25.4
Commerce	12,999	46,091	3,420	1,009,740	136,907	1,146,646	88.2
Compton	98,037	21,398	23,320	1,314,122	67,404	1,381,526	14.1
Covina	52,044	25,978	17,142	1,254,739	32,648	1,287,387	24.7
Cudahy	23,574	2,880	5,563	249,191	7,918	257,109	10.9
Culver City	39,391	46,575	16,951	1,171,591	56,886	1,228,477	31.2
Diamond Bar	44,876	12,008	14,852	988,779	18,857	1,007,636	22.5
Downey	113,486	48,785	34,487	2,404,101	72,267	2,476,368	21.8
Duarte	21,762	11,892	7,207	553,303	28,342	581,646	26.7
El Monte	115,290	31,093	28,721	1,724,627	81,481	1,806,108	15.7
El Segundo	16,714	40,257	7,115	917,870	68,257	986,128	59.0
Gardena	59,723	30,506	20,847	1,150,528	63,005	1,213,533	20.3
Glendale	195,438	115,331	73,419	3,769,789	187,585	3,957,374	20.2
Glendora	55,823	22,939	18,613	1,371,729	43,717	1,415,446	25.4
Hawaiian Gardens	15,319	5,021	3,862	286,801	4,449	291,251	19.0
Hawthorne	86,630	26,850	29,138	1,252,872	70,820	1,323,692	15.3
Hermosa Beach	19,599	7,737	9,538	366,447	10,878	377,325	19.3
Hidden Hills	2,015	3,012	639	87,928	7,884	95,812	47.5
Huntington Park	61,885	17,136	15,618	812,802	23,786	836,589	13.5
Industry	12,229	68,185	3,211	1,721,946	208,909	1,930,855	157.9
Inglewood	118,098	32,553	38,962	1,595,692	72,742	1,668,433	14.1
Irwindale	1,518	18,305	400	501,332	57,613	558,946	368.2
La Canada Flintridge	19,483	6,657	6,543	546,334	10,877	557,211	28.6
La Habra Heights	7,620	451	2,543	109,265	3,851	113,117	14.8
La Mirada	49,130	18,358	14,825	934,397	57,470	991,867	20.2
La Puente	41,688	5,760	9,954	630,580	11,044	641,624	15.4
La Verne	32,173	12,765	11,563	745,285	44,406	789,691	24.5
Lakewood	79,392	19,324	26,346	1,430,271	34,439	1,464,710	18.4
Lancaster	165,579	48,901	51,326	2,516,475	123,799	2,640,274	15.9
Lawndale	32,928	7,122	9,705	402,349	10,931	413,280	12.6
Lomita	19,964	4,748	7,915	276,042	8,123	284,165	14.2
Long Beach	474,501	158,383	168,033	7,723,426	315,613	8,039,039	16.9
Los Angeles	3,928,799	1,799,541	1,382,291	66,561,023	2,774,878	69,335,901	17.6
Lynwood	71,809	9,528	15,134	827,176	20,887	848,063	11.8
Malibu	9,057	6,529	3,611	363,285	14,317	377,602	41.7
Manhattan Beach	35,369	18,614	14,066	844,760	23,203	867,963	24.5
Maywood	27,592	3,446	6,581	276,006	10,740	286,747	10.4
Monrovia	37,757	19,704	14,130	865,370	35,419	900,788	23.9
Montebello	66,151	29,107	20,270	1,439,492	67,803	1,507,295	22.8
Monterey Park	62,408	33,848	20,660	1,274,432	44,961	1,319,393	21.1
Norwalk	106,788	25,151	27,320	1,631,482	42,400	1,673,881	15.7

Municipality	Population	Employment	Households	VMT			VMT/Pop
				Passenger Vehicles	Trucks	Total	
Palmdale	160,985	30,420	45,569	3,006,155	95,785	3,101,940	19.3
Palos Verdes Estates	13,535	2,450	5,066	258,942	4,833	263,776	19.5
Paramount	54,752	20,332	14,020	914,234	50,357	964,590	17.6
Pasadena	142,823	115,730	59,821	3,799,017	131,670	3,930,688	27.5
Pico Rivera	65,424	19,572	17,208	1,138,261	52,840	1,191,102	18.2
Pomona	153,433	55,752	40,206	3,034,480	111,384	3,145,864	20.5
Rancho Palos Verdes	44,215	10,971	16,501	914,209	20,610	934,820	21.1
Redondo Beach	68,254	25,808	29,818	1,221,602	52,735	1,274,337	18.7
Rolling Hills	1,955	102	695	28,278	354	28,632	14.6
Rolling Hills Estates	8,559	1,402	3,173	145,855	2,584	148,439	17.3
Rosemead	52,104	12,011	13,715	761,520	22,643	784,164	15.0
San Dimas	35,199	13,274	12,545	798,683	25,934	824,618	23.4
San Fernando	24,431	11,381	6,233	427,654	27,562	455,216	18.6
San Gabriel	40,632	13,909	13,024	704,116	20,459	724,575	17.8
San Marino	13,256	3,752	4,343	217,640	4,489	222,129	16.8
Santa Clarita	204,149	76,637	68,935	4,661,848	231,945	4,893,793	24.0
Santa Fe Springs	18,679	54,591	5,420	1,269,807	166,229	1,436,036	76.9
Santa Monica	93,016	92,329	48,049	2,496,620	98,913	2,595,533	27.9
Sierra Madre	11,021	1,934	4,865	185,011	4,835	189,846	17.2
Signal Hill	11,515	15,283	4,330	375,094	41,156	416,249	36.1
South El Monte	18,290	12,629	4,061	414,962	33,469	448,432	24.5
South Gate	97,521	21,195	24,333	1,227,316	60,921	1,288,237	13.2
South Pasadena	25,892	9,576	10,549	429,625	9,620	439,244	17.0
Temple City	35,924	7,482	11,805	551,337	21,440	572,777	15.9
Torrance	147,860	106,177	56,970	3,525,612	179,104	3,704,715	25.1
Unincorporated Areas	1,067,225	257,395	313,836	18,343,532	669,811	19,013,343	17.8
Vernon	188	43,802	52	704,600	165,303	869,903	4627.1
Walnut	30,770	8,792	9,197	756,304	17,412	773,716	25.1
West Covina	110,059	29,982	32,602	2,075,474	50,668	2,126,142	19.3
West Hollywood	36,432	30,913	23,705	847,730	42,279	890,009	24.4
Westlake Village	8,079	14,679	3,206	431,439	13,208	444,647	55.0
Whittier	84,869	26,964	28,043	1,622,868	36,012	1,658,880	19.5

2040s1

Municipality	Population	Employment	Households	VMT			VMT/Pop
				Passenger Vehicles	Trucks	Total	
Agoura Hills	18,843	10,013	6,789	429,483	23,487	452,970	24.0
Alhambra	94,325	34,862	34,157	1,424,403	59,301	1,483,704	15.7
Arcadia	67,702	34,344	24,029	1,412,733	44,908	1,457,641	21.5
Artesia	17,821	6,319	4,949	279,054	8,562	287,616	16.1
Azusa	56,782	14,927	15,975	865,832	35,691	901,523	15.9
Baldwin Park	81,870	18,967	18,896	1,145,143	51,499	1,196,643	14.6
Bell	36,809	14,741	9,158	510,334	28,844	539,178	14.6
Bell Gardens	43,798	11,199	10,017	572,591	17,617	590,207	13.5
Bellflower	86,035	16,906	25,901	1,046,489	30,143	1,076,633	12.5
Beverly Hills	36,311	74,000	15,922	1,448,679	55,655	1,504,333	41.4
Bradbury	1,497	291	603	24,093	810	24,903	16.6
Burbank	113,792	134,327	48,403	3,128,603	186,001	3,314,603	29.1
Calabasas	21,158	19,993	7,922	731,012	49,170	780,182	36.9
Carson	106,492	71,299	30,522	2,233,679	189,257	2,422,936	22.8
Cerritos	51,192	35,991	16,154	1,367,772	61,584	1,429,356	27.9
Claremont	41,944	22,818	14,258	939,103	25,745	964,848	23.0
Commerce	13,661	51,552	3,619	1,037,368	154,751	1,192,119	87.3
Compton	101,341	24,190	24,221	1,256,123	73,458	1,329,581	13.1
Covina	55,197	31,016	18,435	1,222,380	39,356	1,261,735	22.9
Cudahy	26,820	3,492	6,550	262,905	8,966	271,871	10.1
Culver City	41,053	55,554	17,808	1,177,622	64,155	1,241,776	30.2
Diamond Bar	50,660	14,181	17,148	1,002,761	23,436	1,026,197	20.3
Downey	120,828	59,487	37,050	2,417,421	85,711	2,503,132	20.7
Duarte	24,184	13,470	8,155	534,578	32,058	566,636	23.4
El Monte	132,546	35,233	33,703	1,782,138	89,121	1,871,259	14.1
El Segundo	17,192	49,472	7,336	992,571	76,739	1,069,311	62.2
Gardena	67,655	35,057	23,977	1,147,827	69,044	1,216,871	18.0
Glendale	209,362	135,952	80,175	3,769,993	210,872	3,980,865	19.0
Glendora	59,158	27,152	19,823	1,320,622	59,191	1,379,813	23.3
Hawaiian Gardens	16,545	6,189	4,230	286,079	5,859	291,938	17.6
Hawthorne	93,487	30,084	31,758	1,208,701	74,447	1,283,148	13.7
Hermosa Beach	20,404	8,989	9,950	349,857	12,960	362,817	17.8
Hidden Hills	2,168	3,092	704	79,683	8,629	88,312	40.7
Huntington Park	69,079	19,619	17,799	812,763	27,022	839,785	12.2
Industry	13,602	76,254	3,732	1,749,048	221,271	1,970,318	144.9
Inglewood	120,634	38,332	40,299	1,484,140	82,883	1,567,023	13.0
Irwindale	1,971	22,724	526	536,551	62,930	599,481	304.2
La Canada Flintridge	20,471	8,854	6,912	554,504	15,083	569,588	27.8
La Habra Heights	8,601	509	3,001	113,163	4,438	117,601	13.7
La Mirada	51,814	20,961	15,703	929,420	62,036	991,456	19.1
La Puente	49,420	6,378	12,120	660,968	12,978	673,946	13.6
La Verne	36,233	14,172	13,396	733,777	47,338	781,115	21.6
Lakewood	82,578	22,202	27,587	1,359,133	39,313	1,398,447	16.9
Lancaster	208,045	57,752	65,854	2,873,028	152,213	3,025,241	14.5
Lawndale	36,366	8,243	10,914	399,012	12,371	411,383	11.3
Lomita	20,619	5,747	8,179	258,723	9,227	267,951	13.0
Long Beach	535,550	190,416	194,849	7,808,613	368,333	8,176,945	15.3
Los Angeles	4,597,446	2,100,234	1,671,186	68,033,029	3,399,642	71,432,671	15.5
Lynwood	76,393	11,092	16,273	816,634	22,762	839,396	11.0
Malibu	10,271	7,843	4,256	353,888	19,257	373,144	36.3
Manhattan Beach	36,913	22,048	14,711	824,883	28,341	853,224	23.1
Maywood	28,706	3,877	6,873	261,738	11,983	273,721	9.5
Monrovia	40,645	23,092	15,405	835,732	39,339	875,071	21.5
Montebello	69,172	33,753	21,485	1,404,288	74,113	1,478,401	21.4
Monterey Park	67,655	38,758	22,557	1,284,047	51,171	1,335,218	19.7
Norwalk	110,999	29,974	28,545	1,585,666	49,402	1,635,068	14.7

Municipality	Population	Employment	Households	VMT			VMT/Pop
				Passenger Vehicles	Trucks	Total	
Palmdale	207,911	34,650	62,801	3,331,137	108,917	3,440,054	16.5
Palos Verdes Estates	13,853	2,819	5,198	241,274	5,564	246,839	17.8
Paramount	57,745	23,852	14,798	914,646	53,564	968,209	16.8
Pasadena	157,196	139,727	67,219	3,842,814	158,076	4,000,890	25.5
Pico Rivera	72,430	21,658	19,540	1,130,890	56,745	1,187,635	16.4
Pomona	184,131	67,208	49,459	3,218,313	130,687	3,349,000	18.2
Rancho Palos Verdes	45,485	12,962	17,022	857,399	24,300	881,699	19.4
Redondo Beach	73,692	29,604	32,712	1,151,727	62,629	1,214,356	16.5
Rolling Hills	2,063	120	740	26,716	404	27,120	13.1
Rolling Hills Estates	9,209	1,985	3,478	146,428	3,522	149,949	16.3
Rosemead	56,890	14,158	15,231	761,958	25,191	787,149	13.8
San Dimas	37,753	15,707	13,701	787,368	28,997	816,365	21.6
San Fernando	26,550	13,042	6,838	414,108	29,461	443,570	16.7
San Gabriel	45,687	16,717	15,030	708,603	25,418	734,021	16.1
San Marino	13,606	4,594	4,469	214,251	5,627	219,878	16.2
Santa Clarita	249,170	87,689	89,029	4,848,490	251,588	5,100,078	20.5
Santa Fe Springs	20,637	60,974	6,179	1,346,679	173,328	1,520,006	73.7
Santa Monica	99,526	114,949	53,124	2,556,388	136,817	2,693,204	27.1
Sierra Madre	11,664	2,396	5,199	181,576	5,660	187,237	16.1
Signal Hill	13,219	18,018	5,045	380,367	44,870	425,237	32.2
South El Monte	20,021	13,924	4,525	418,029	35,018	453,048	22.6
South Gate	106,328	23,278	26,790	1,219,112	64,414	1,283,526	12.1
South Pasadena	27,002	11,748	11,054	431,178	12,360	443,538	16.4
Temple City	39,587	8,911	13,263	551,512	24,082	575,593	14.5
Torrance	158,574	124,986	61,692	3,508,458	200,960	3,709,419	23.4
Unincorporated Areas	1,248,903	307,997	385,786	18,914,519	835,013	19,749,532	17.8
Vernon	117	46,752	30	805,092	165,918	971,010	8299.2
Walnut	33,428	10,293	10,252	751,165	19,760	770,925	23.1
West Covina	118,074	36,540	35,292	2,031,260	61,598	2,092,858	17.7
West Hollywood	37,697	35,544	24,496	774,107	49,523	823,629	21.8
Westlake Village	8,550	17,563	3,410	440,548	17,183	457,732	53.5
Whittier	90,350	33,390	30,175	1,631,644	45,619	1,677,263	18.6

APPENDIX B

Emissions Forecasting and Reduction Methods

Purpose

This appendix describes the greenhouse gas (GHG) accounting and projection methods for the Adjusted Business-as-Usual (BAU) forecasts for 2030, 2035, and 2045, and the methods for quantifying GHG emissions reductions for the measures and actions listed in the *2045 Los Angeles County Climate Action Plan (2045 CAP)*.

Section B.1: 2018–2045 Adjusted Business-as-Usual Forecasts

This section describes the approach for modeling an Adjusted BAU scenario that projects future emissions based on current population and regional growth trends; land use growth patterns; and implementation of federal, state, and County of Los Angeles (County) regulations and policies, including renewable-energy targets pursuant to the California Renewables Portfolio Standard (RPS) and Senate Bill (SB) 100, Title 24 Building Energy Efficiency updates, and the Advanced Clean Cars regulations and Pavley vehicle efficiency standards.

Section B.2: Greenhouse Gas Reduction Measures and Actions

This section describes the calculation methods for estimating local GHG emissions reductions for the 2045 CAP measures and actions. These emissions reductions occur beyond federal, state, and County regulations and policies accounted for in the Adjusted BAU forecast. The quantified measures and actions include:

- ES1: Develop a Sunset Strategy for All Oil and Gas Operations
- ES2: Procure Zero-Carbon Electricity
- ES3: Increase Renewable Energy Production
- E1: Decarbonize Existing Buildings
- E2: Decarbonize New Development

- E4: Improve Energy Efficiency of Existing Buildings
- E6: Reduce Indoor and Outdoor Water Consumption
- T1: Increase Density Near High-Quality Transit Areas
- T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use
- T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips
- T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation
- T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales
- T7: Electrify County Fleet Vehicles
- T8: Accelerate Freight Decarbonization
- T9: Expand Use of Zero-Emission Technologies for Off-Road Vehicles and Equipment
- W1: Institutionalize Sustainable Waste Systems and Practices
- A1: Conserve Agricultural and Working Lands, Forest Lands, and Wildlands
- A3: Expand Unincorporated Los Angeles County's Tree Canopy and Green Spaces

B.1 2018–2045 Adjusted Business-as-Usual Forecasts

Like the standard BAU forecast, the Adjusted BAU forecast provides an estimate of future emissions levels based on the continuation of existing trends in demographic growth (such as population and housing), activity or resource consumption (such as electricity use), technology changes, and regulation. Unlike the BAU forecast, the Adjusted BAU forecast accounts for expected outcomes of federal, state, and local measures. Specifically, the Adjusted BAU forecast includes the following programs and policies:

1. California's RPS program and SB 100 targets for renewable energy.
2. Updates to Title 24 standards.
3. Implementation of the Advanced Clean Cars regulations and Pavley standards.

These three adjustments are explained in the following sections.

Renewables Portfolio Standard and Senate Bill 100

The Clean Energy and Pollution Reduction Act of 2015, or SB 350 (Chapter 547, Statutes of 2015) was approved by then-Governor Jerry Brown on October 7, 2015. SB 350 increased the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased from 33 percent to 50 percent by December 31, 2030. On September 10, 2018, Governor Brown signed SB 100, establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also creates new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned utilities and publicly owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers must also have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, because many California energy providers are already meeting or exceeding the RPS goals established by SB 350. The Adjusted BAU forecasts accounts for these renewable energy targets, as discussed below.

Electricity Emission Factors under the Renewables Portfolio Standard

To account for California’s RPS targets under SB 100 in the Adjusted BAU forecast, the GHG emission factors for electricity consumption were adjusted. These emissions factors represent indirect GHG emissions generated at power plants and are applied to electricity consumption in unincorporated Los Angeles County (see Appendix A for discussion). The RPS has the effect of lowering indirect emissions associated with electricity consumption because it mandates increasing percentages of renewable sources of power supplied by electricity utilities in future years. The RPS requires 60 percent eligible renewables by 2030 and 100 percent RPS-eligible renewable resources by 2045.¹

The two utilities supplying electricity to unincorporated Los Angeles County are Southern California Edison (SCE) and the Clean Power Alliance (CPA). To adjust for the RPS in future years, indirect electricity emission factors reported by SCE and CPA along with the energy power mix were collected for the years 2015–2020. SCE reports its emission factors in their annual sustainability reports and has values for 2015–2019. CPA reports its emission factors to the Climate Registry and has values for 2018–2020. The California Energy Commission (CEC) reports power mix data in Power Content Labels; these are available through 2020 for both SCE and CPA.²

Based on data reported for 2016–2020, a composite “non-RPS” emission intensity factor was generated for each year. This factor is calculated based on the reported total emission factor and the non-RPS power mix. For example, SCE’s total reported emission factor in 2019 is 396.8 pounds (lb) of carbon dioxide equivalent (CO₂e) per megawatt-hour (MWh) for a non-RPS power mix of 65 percent; the “non-RPS” emission intensity factor is therefore 612.4 lb CO₂e/MWh. Then, for each forecast year (2030, 2035, and 2045), an emission factor for total delivered electricity was calculated based on these composite “non-RPS” emission intensity factors for each reported year and the projected RPS requirement for eligible renewables for each year. For example, a 60 percent eligible renewable mix (required by 2030) applied to the “non-RPS” emission intensity factor of 612.4 lb CO₂e/MWh results in a total emission factor of 245 lb CO₂e/MWh.

Table B-1 presents the electricity power mix values reported (2016–2020) and forecasted (2030, 2035, 2045) for SCE and CPA, incorporating the RPS. **Table B-2** presents the electricity emission factors reported for SCE and CPA for 2016–2020 along with the Adjusted BAU forecast for 2030, 2035, and 2045, incorporating the RPS.

¹ RPS-eligible resources include solar, wind, geothermal, small hydroelectric, or biopower facilities that are located within the Western Electricity Coordinating Council (WECC) region, which encompasses 14 Western U.S. states and portions of Canada and Mexico. The majority of RPS-eligible electricity currently comes from solar and wind. Large hydroelectric dams and nuclear facilities, two major sources of carbon-free power, are not RPS-eligible.

² California Energy Commission. 2019. 2018 Power Content Label. July 2019. Available: https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Southern_California_Edison.pdf. Accessed January 2021.

Table B-1: SCE and CPA Electricity Power Mix

ELECTRICITY POWER MIX	REPORTED					FORECASTED		
	2016	2017	2018	2019	2020	2030	2035	2045
SCE								
Eligible Renewables	28%	32%	36%	35%	n/a	60%	73%	100%
Nuclear & Hydroelectric	25%	28%	21%	24%	n/a	n/a	n/a	n/a
Natural Gas & Unspecified	60%	54%	54%	49%	n/a	n/a	n/a	n/a
CPA Lean Rate								
Eligible Renewables	n/a	n/a	65%	36%	41%	60%	73%	100%
Nuclear & Hydroelectric	n/a	n/a	24%	1%	5%	n/a	n/a	n/a
Natural Gas & Unspecified	n/a	n/a	11%	63%	55%	n/a	n/a	n/a
CPA Clean Rate								
Eligible Renewables	n/a	n/a	61%	51%	50%	60%	73%	100%
Nuclear & Hydroelectric	n/a	n/a	26%	14%	9%	n/a	n/a	n/a
Natural Gas & Unspecified	n/a	n/a	13%	36%	41%	n/a	n/a	n/a

NOTES:

Abbreviations: CPA = Clean Power Alliance; n/a = data not available or not applicable; SCE = Southern California Edison.

Reported values are shown for 2016–2020. Estimated (forecasted) values based on Renewables Portfolio Standard are shown for 2030, 2035, and 2045.

Table B-2: SCE and CPA Electricity Emission Factors under The Renewables Portfolio Standard

UTILITY AND CATEGORY OF ELECTRICITY SUPPLY	EMISSION FACTORS (LB CO ₂ E/MWH)							
	2016	2017	2018	2019	2020	2030	2035	2045
SCE								
Non-RPS Electricity	734.7	807.4	801.6	606.5	n/a	738.6	738.6	n/a
Total Delivered Electricity	529	549	513.0	393.0	n/a	295.5	197.0	0.0
CPA Lean								
Non-RPS Electricity	n/a	n/a	30.3	590.0	1029.6	809.8	809.8	n/a
Total Delivered Electricity	n/a	n/a	10.6	377.6	608.5	323.9	215.9	0.0
CPA Clean								
Non-RPS Electricity	n/a	n/a	25.1	342.2	685.7	513.9	513.9	n/a
Total Delivered Electricity	n/a	n/a	9.8	169.4	342.2	205.6	137.0	0.0

NOTES:

Abbreviations: CO₂e = carbon dioxide equivalent; lb = pounds; MWh = megawatt-hour; n/a = data not available or not applicable.

Reported values are shown for 2016–2020. Estimated (forecasted) values based on RPS are shown for 2030, 2035, and 2045.

Data Sources:

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxsx3rurxtq4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxsx3rurxtq4))/frmLILogin.aspx)
- Power Content Labels
Link: <https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure/power-content-label>
- California RPS Program Overview
Link: https://www.cpuc.ca.gov/RPS_Overview/
- SB 100
Link: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

Residential Buildings

Like the BAU Forecast, energy consumption in residential buildings is projected based on building footprint projections for residential stock in unincorporated Los Angeles County (see Appendix A). As discussed above, the electricity emission factors for electricity supplied by SCE are based on SCE’s historical power mix (2015–2019) and RPS targets.³ To account for the RPS and SB 100, SCE emission factors were applied to total residential electricity consumption for 2018, 2030, 2035, and 2045. As reported in Table B-2 above, SCE emission factors were estimated to be 513 lb CO₂e/MWh in 2018, 295.5 lb CO₂e/MWh in 2030, 197 lb CO₂e/MWh in 2035, and 0 lb CO₂e/MWh in 2045.

Beginning in 2019, residential customers in unincorporated Los Angeles County were automatically enrolled in the Clean Power Alliance’s (CPA) “Clean” electricity rate option. While participation data for 2019 were unavailable when the 2018 inventory was developed, a July 2021 member status report indicated a 96 percent participation rate for all residential customers in unincorporated Los Angeles County in 2021.⁴ Under the Clean rate option in 2019, residential customers received 61 percent of their electricity from eligible renewable sources via the CPA, 26 percent from carbon-free sources like hydropower, and 13 percent from unspecified fossil-fuel sources like natural gas and coal (see Table B-1 above). The remaining 4 percent of residential customers were enrolled in CPA’s “Lean” electricity rate option. Under the Lean rate option in 2019, residential customers received 65 percent of their electricity from eligible renewable sources via the CPA, 24 percent from carbon-free sources like hydropower, and 11 percent from unspecified fossil-fuel sources like natural gas and coal (see Table B-1 above).

GHG emissions from CPA-provided electricity are calculated using CPA data including electricity consumption, emission factors, and power mix.⁵ As reported in Table B-2 above, CPA’s Lean emission rates are estimated to be 10.6 lb CO₂e/MWh in 2018, 323.9 lb CO₂e/MWh in 2030, 215.9 lb CO₂e/MWh in 2035, and 0 lb CO₂e/MWh in 2045.⁶ CPA’s Clean emission rates are estimated to be 9.8 lb CO₂e/MWh in 2018, 205.6 lb CO₂e/MWh in 2030, 137 lb CO₂e/MWh in 2035, and 0 lb

³ California Energy Commission. 2019. 2018 Power Content Label. July 2019. Available: https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Southern_California_Edison.pdf. Accessed January 2021.

⁴ Clean Power Alliance. 2021. *Member Status Report: Los Angeles County*. July 28, 2021.

⁵ California Energy Commission. 2019. 2018 CPA Power Content Label. July 2019. Available: https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Clean_Power_Alliance.pdf. Accessed January 2021.

⁶ The Climate Registry. 2020. Utility-Specific Emission Factors. Available: <https://www.theclimateregistry.org/our-members/cris-public-reports/>. Accessed January 2021.

CO₂e/MWh in 2045.⁷ CPA emission factors were applied to total residential electricity consumption in 2018, 2030, 2035, and 2045 and emissions for interim years were linearly interpolated.

For emissions associated with natural gas consumption, emission factors are held constant from 2018.⁸ RPS and SB 100 do not affect natural gas usage or emissions, and there are no federal, state, or local policies that would result in changes to the natural gas emission factors in the Adjusted BAU forecast.

Data Sources:

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxs3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxs3rurxtg4))/frmLILogin.aspx)
- Power Content Labels
Link: <https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure/power-content-label>
- California RPS Program Overview
Link: https://www.cpuc.ca.gov/RPS_Overview/
- SB 100
Link: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

Commercial and Institutional Buildings

Like the BAU Forecast, energy consumption in commercial, institutional, and agricultural buildings is forecasted based on building footprint projections for nonresidential building stock in unincorporated Los Angeles County (see Appendix A). In June 2018, nonresidential customers in unincorporated Los Angeles County were enrolled in CPA's Clean Power option, with less than 5 percent of customers opting out; the year-end CPA participation rate is held constant with the remaining customers continuing to receive electricity from SCE. The emission factors for CPA are based on historical power mix (2018–2020) and California's RPS targets, as discussed above and presented in Table B-1.⁹ Emission factors for SCE and CPA are described under *Electricity Emission Factors under the Renewables Portfolio Standard*, above. Natural gas emission factors are held constant from 2018.

Data Sources:

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxs3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxs3rurxtg4))/frmLILogin.aspx)
- Power Content Labels
Link: <https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure/power-content-label>
- California RPS Program Overview
Link: https://www.cpuc.ca.gov/RPS_Overview/
- SB 100
Link: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100

⁷ The Climate Registry. 2020. Utility-Specific Emission Factors. Available: <https://www.theclimateregistry.org/our-members/cris-public-reports/>. Accessed January 2021.

⁸ The Climate Registry. 2018. Default Emission Factors. May 1, 2018. Available: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Documents.pdf>. Accessed January 2021.

⁹ California Public Utilities Commission. 2018. Renewables Portfolio Standards (RPS). Available: <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/rps/rps-program-overview>. Accessed January 2021.

Manufacturing and Industrial Buildings

ELECTRICITY AND NATURAL GAS

Like the BAU Forecast, energy consumption in manufacturing and industrial buildings are forecasted based on building footprint projections for nonresidential stock in unincorporated Los Angeles County (see Appendix A).¹⁰ As discussed above, beginning in 2018, nonresidential customers in unincorporated Los Angeles County were enrolled in CPA's Clean Power rate option (50 percent eligible renewable), with less than 5 percent of customers opting out; the year-end CPA participation rate is held constant with the remaining customers continuing to receive electricity from SCE. The emission factors for CPA are based on historical power mix (2018–2020) and California's RPS targets, as discussed above and presented in Table B-1.¹¹ Emission factors for SCE and CPA are the same as described under *Electricity Emission Factors under the Renewables Portfolio Standard*, above.

California Building and Energy Efficiency Standards (Title 24)

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods (CEC, 2016). The current Title 24, Part 6 standards (2019 standards) were made effective on January 1, 2020. The new Title 24, Part 6 standards (2022 standards) were adopted by the CEC in August 2021 and will be made effective on January 1, 2023. The Adjusted BAU forecasts accounts for these updates to Title 24, as discussed below.

Residential Buildings

Under the Adjusted BAU scenario, energy use in residential buildings was adjusted to reflect the effects of Title 24 standards. Title 24 Building Efficiency Standards are updated every three years by the California Energy Commission. The model uses approximate increased energy efficiency percentages for the 2019 Title 24 standards¹² implemented in 2020, and the 2022 standards to be implemented in 2023.¹³ The 2019 percentages are based on CEC estimates for residential and nonresidential buildings and assume that the solar photovoltaic (PV) requirement is met. The 2022 percentages were calculated based on CEC's draft environmental impact report for the

¹⁰ UCLA Institute of Environmental Studies. 2018. Analysis of County of Los Angeles Parcel Assessor's Data.

¹¹ California Public Utilities Commission. 2018. Renewables Portfolio Standards (RPS). Available: <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/rps/rps-program-overview>. Accessed January 2021.

¹² California Energy Commission. 2020. 2019 Building Energy Efficiency Standards FAQ. Available: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf. Accessed December 2021.

¹³ California Energy Commission. 2021. 2022 Building Energy Efficiency Standards Summary. Available: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf. Accessed December 2021.

2022 standards.¹⁴ This document outlined the changes in building energy use from the 2019 to 2022 standards on a project-by-project basis. Weighted averages were taken to generate efficiency change values for single-family and multifamily residential buildings for both electricity and natural gas. These efficiency changes are applied to 2019 energy use intensity (EUI) values to generate 2022 EUI values for each building type, which are then applied to the square footage of new construction. In the model, the adjusted EUI is also applied to 15 percent of the total square footage of existing buildings to account for the approximately 15 percent of buildings that are retrofitted each year. Because Title 24 is updated on a three-year cycle, the 2022 changes in energy efficiency are applied every three years in the model.

Data Sources:

- Title 24 2019 Update
Link: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
- Title 24 2022 Update
Link: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf
- Title 24 2022 Environmental Impact Report
Link: <https://www.energy.ca.gov/publications/2021/environmental-impact-report-amendments-building-efficiency-standards-2022-energy>

Commercial and Institutional Buildings

Under the Adjusted BAU scenario, energy use in commercial, institutional, and agricultural buildings was adjusted to reflect the effects of Title 24 standards. The methods for adjusting energy use under new Title 24 standards are the same as described for *Residential Buildings*, above.

Data Sources:

- Title 24 2019 Update
Link: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
- Title 24 2022 Update
Link: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf
- Title 24 2022 Environmental Impact Report
Link: <https://files.ceqanet.opr.ca.gov/268487-2/attachment/MNZKECIHPRRVXPxfeMxJjIoL-VXe6AFxDecdnxi8c5vzAkZWPhhj5GPnAarnDp4zd7reUQfLY0fV2AI70>

Manufacturing and Industrial Buildings

Under the Adjusted BAU scenario, energy use in manufacturing and construction buildings was adjusted to reflect the effects of Title 24 standards. The methods for adjusting energy use under new Title 24 standards are the same as described for *Residential Buildings*, above. Title 24 Building Efficiency Standards are updated every three years by the California Energy Commission.

¹⁴ California Energy Commission. 2021. Draft Environmental Impact Report: Amendments to the Building Energy Efficiency Standards (2022 Energy Code). Available: <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency>. Accessed December 2021.

Data Sources:

- Title 24 2019 Update
Link: https://www.energy.ca.gov/sites/default/files/2020-03/Title_24_2019_Building_Standards_FAQ_ada.pdf
- Title 24 2022 Update
Link: https://www.energy.ca.gov/sites/default/files/2021-08/CEC_2022_EnergyCodeUpdateSummary_ADA.pdf
- Title 24 2022 Environmental Impact Report
Link: <https://files.ceqanet.opr.ca.gov/268487-2/attachment/MNZKECIHPRRVXPxfeMxJjIoL-VXe6AFxDecdnxi8c5vzAkZWPhhj5GPnAarnDp4zd7reUQfLY0fV2AI70>

Advanced Clean Cars Regulations and Pavley Vehicle Efficiency Standards

In 2002, Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that the California Air Resources Board (CARB) develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State.” To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations, adding GHG emissions standards to California’s existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016. These regulations are known as the “Pavley standards” (named for the bill’s author, State Senator Fran Pavley).

In January 2012, pursuant to Recommended Measures T-1 and T-4 of the Original Scoping Plan, CARB approved the Advanced Clean Cars Program, an emissions-control program for model year 2017 through 2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, the new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions. The program also requires car manufacturers to offer for sale an increasing number of zero-emission vehicles (ZEVs) each year, including battery electric, fuel cell, and plug-in hybrid electric vehicles. In December 2012, CARB adopted regulations allowing car manufacturers to comply with California’s GHG emissions requirements for model years 2017–2025 through compliance with the EPA GHG requirements for those same model years.¹⁵

The Adjusted BAU forecasts accounts for these vehicle fleet efficiency standards, as discussed below.

On-road Transportation: Passenger Vehicles and Trucks

Like the BAU forecast, vehicle miles traveled (VMT) from passenger vehicles and trucks were estimated using SCAG’s 2016 Regional Travel Demand Model, which forecasts VMT for the year 2040 (see Appendix A). GHG emissions under the Advanced Clean Cars regulations and Pavley standards in unincorporated Los Angeles County are calculated using VMT and corresponding weighted emission factors by vehicle type (passenger vehicles and trucks)¹⁶ for years 2018, 2030,

¹⁵ Advanced Clean Cars Program information available online: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/about>. Accessed on February 7, 2020.

¹⁶ Passenger vehicles correspond to EMFAC categories LDA, LDT1, LDT2, MCY, and MD. Trucks correspond to EMFAC categories LHDT1, LHDT2, MHDT, HHDT, and MH.

2035, and 2045 from the EMFAC2021 model.¹⁷ Interim year emissions were interpolated for 2019 through 2029, 2031 through 2034, and 2036 through 2044.

Data Sources:

- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>
- SCAG Regional Travel Demand Model
Provided by SCAG

On-road Transportation: Buses

Fuel consumption from Metro buses for years 2019 through 2045 was calculated using fuel consumption and VMT data from the EMFAC2021 model. The EMFAC2021 model was run for years 2018, 2030, 2035, and 2045 and the fuel efficiency (miles per gallon, miles per gallon equivalent, or kWh/mile) were calculated.¹⁸ An efficiency factor for diesel, gasoline, compressed natural gas, and electricity was then developed by dividing the 2030, 2035, and 2045 fuel efficiency by the baseline fuel efficiency in 2018. The efficiency factor was then applied to the 2018 fuel consumption by fuel type to determine the project fuel consumption for years 2030, 2035, and 2045. Emission factors for gasoline, diesel and compressed natural (CNG) gas-powered buses are taken from EMFAC2021 database to calculate GHG emissions. Electricity emissions were calculated using CPA Clean option emission factors for the corresponding year. Emissions for interim years were interpolated for years 2019 through 2030, 2031 through 2034, and 2036 through 2044.

Data Sources:

- Metro Bus Ridership
Link: <https://isotp.metro.net/MetroRidership/Index.aspx>
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>

Adjusted BAU Forecast Results

Table B-3 presents emissions for 2018 along with the Adjusted BAU forecast for 2030, 2035, and 2045 for the Stationary Energy sector.

¹⁷ California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

¹⁸ California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

Table B-3: Stationary Energy GHG Emissions – 2018 Inventory and Adjusted BAU Forecasts

STATIONARY ENERGY SUBSECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Residential Buildings	962,743	825,053	755,555	617,836
Commercial, Institutional, and Agricultural Buildings	349,373	344,421	291,764	185,682
Manufacturing and Construction Buildings	244,417	251,607	212,726	133,633
Energy Industries	98,554	29,495	29,526	29,587
Fugitive Emissions from Oil and Natural Gas Systems	41,066	49,130	49,275	49,493
Agriculture, Forestry and Other Fishing Activities	2,658	2,600	2,580	2,562
TOTAL	1,698,809	1,502,306	1,341,401	1,018,793

NOTES:

Abbreviations: BAU = business-as-usual; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.
 These emissions account for the RPS, SB 100, and Title 24 updates.

Table B-4 presents emissions for 2018 along with the adjusted BAU forecast for 2030, 2035, and 2045 for the Transportation sector.

Table B-4: Transportation GHG Emissions – 2018 Inventory and Adjusted BAU Forecasts

TRANSPORTATION SUBSECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Passenger Vehicles	2,665,824	2,166,604	2,047,769	1,977,297
Buses	29,371	29,026	22,076	5,326
Railways	9,490	10,255	10,389	10,658
TOTAL	2,704,685	2,205,885	2,080,234	1,993,281

NOTES:

Abbreviations: BAU = business-as-usual; GHG = greenhouse gas; MTCO₂e = metric tons of carbon dioxide equivalent.
 These emissions account for the Advanced Clean Cars regulations and Pavley vehicle efficiency standards.

Table B-5 presents total emissions for 2018 along with the Adjusted BAU forecast for 2030, 2035, and 2045 for all sectors.

Table B-5: Total GHG Emissions by Sector – 2018 Inventory and Adjusted BAU Forecasts

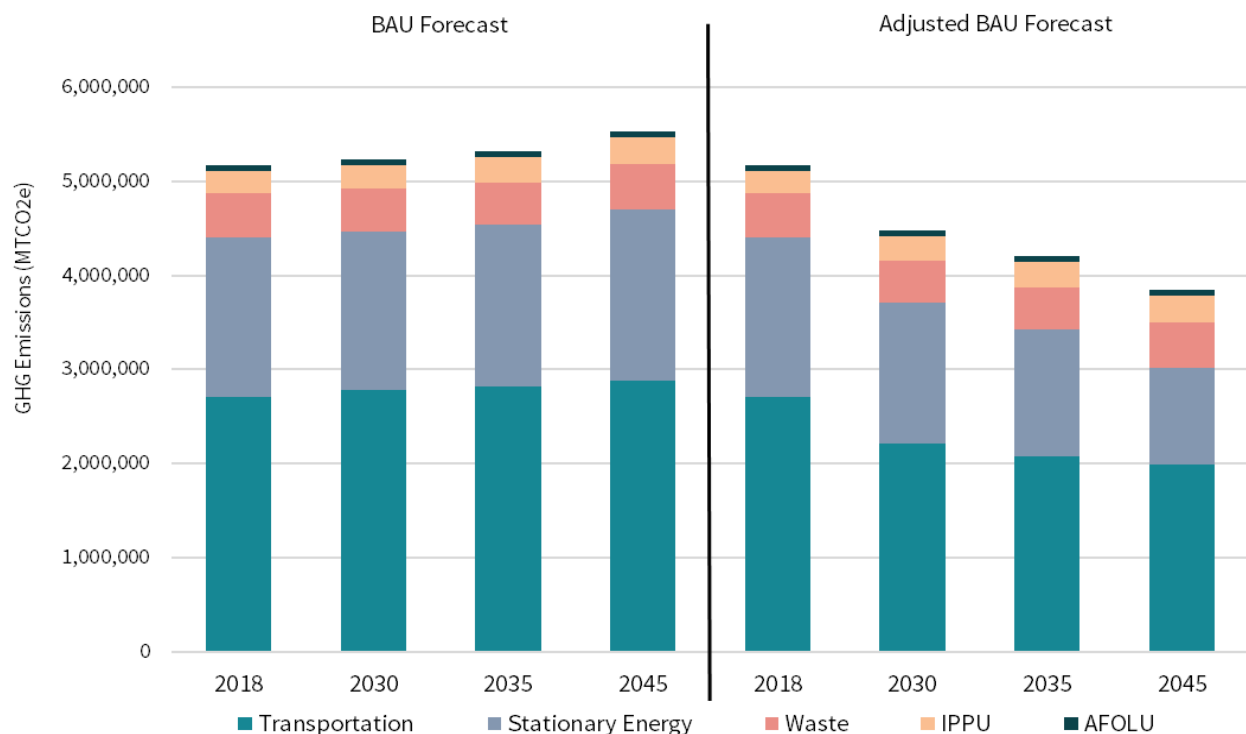
SECTOR	ANNUAL GHG EMISSIONS (MTCO ₂ E)			
	2018	2030	2035	2045
Stationary Energy	1,698,809	1,502,306	1,341,401	1,018,793
Transportation	2,704,685	2,205,885	2,080,234	1,993,281
Waste	469,382	451,919	454,097	482,489
IPPU	239,505	259,605	267,981	284,731
AFOLU	60,860	60,860	60,860	60,860
TOTAL	5,173,240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

NOTES:

Abbreviations: AFOLU = Agriculture, Forestry, and Other Land Use; BAU = business-as-usual; GHG = greenhouse gas; IPPU = Industrial Processes and Product Use; MTCO₂e = metric tons of carbon dioxide equivalent.

Compared to the BAU forecasts, the Adjusted BAU forecast only differs for the Stationary Energy and Transportation sectors. Waste, IPPU, and AFOLU are not changed.

Figure B-1 presents total emissions for 2018 along with the BAU and Adjusted BAU forecast for 2030, 2035, and 2045 for all sectors.

**Figure B-1: GHG Emissions by Sector – 2018 Inventory, BAU Forecast, and Adjusted BAU Forecast**

B.2 Greenhouse Gas Reduction Measures and Actions

Energy Supply

Strategy 1: Decarbonize the Energy Supply

MEASURE ES1: DEVELOP A SUNSET STRATEGY FOR ALL OIL AND GAS OPERATIONS

Table B-6: Measure ES1 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	28,368
2035	40,178
2045	52,148

Abbreviations: GHG = greenhouse gas;

MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure ES1 is to reduce oil and gas operations by 40 percent by 2030, 60 percent by 2035, and 80 percent by 2045 (compared to 2015 baseline levels). The aspirational goal of Measure ES1, based on the OurCounty Sustainability Plan, is to cease all oil and gas operations by 2040.

Modeling Approach

Measure ES1 would apply to emissions occurring in the Energy Industries subsector of the Stationary Energy sector of unincorporated Los Angeles County's GHG inventory. Specifically, Measure ES1 would reduce emissions from combined heat and power facilities and fugitive emissions from oil and natural gas systems. There are two combined heat and power facilities that would reduce emissions under this measure: the Pitchess Cogeneration Station in Saugus and the Olive View Medical Center Cogeneration Station in Sylmar. Both facilities combust natural gas to generate heat and electricity.

Both the Pitchess Cogeneration Station and the Olive View Medical Center Cogeneration Station are owned and operated by the County. The Pitchess Cogeneration Station was decommissioned in 2018 and its emissions decreased by 90 percent from 2017 to 2018. Under Measure ES1, these emissions were assumed to remain constant through 2045. The Olive View Medical Center Cogeneration Station will be decommissioned by 2023, so its emissions were reduced by 90 percent consistent with the reduction in emissions achieved when the Pitchess Cogeneration Station was decommissioned.

Measure ES1 would also reduce fugitive emissions from oil and natural gas systems equivalent to the measure's performance objectives: 40 below 2015 levels by 2030, 60 percent by 2035, and

80 percent by 2045. These percentages were multiplied by 2015 emissions to estimate emissions reductions for each future year.

Assumptions

- The decommissioning of the Olive View Medical Center Cogeneration Station would reduce natural gas-related GHG emissions by 90 percent.
- Under Measure ES1, both the Pitchess Cogeneration Station and the Olive View Medical Center Cogeneration Station would continue to combust residual natural gas at 10 percent of their fully operational levels through 2045.
- Measure ES1 will reduce fugitive emissions from oil and natural gas systems linearly with the measure's overall performance objectives for each future year.

Data Sources

- CARB Pollution Mapping Tool
Link: https://www.arb.ca.gov/ei/tools/pollution_map/
- CARB MRR Database
Link: <https://www2.arb.ca.gov/mrr-data>

MEASURE ES2: PROCURE ZERO-CARBON ELECTRICITY

Table B-15: Measure ES2 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	477,188
2035	317,915
2045	0

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

Supplying unincorporated Los Angeles County's power demand with zero-carbon electricity¹⁹ is critical to achieving significant GHG emissions reductions. The CPA is a nonprofit and community choice energy provider that currently serves 32 communities across Southern California.

Performance Objectives

The goal of Measure ES2 is to enroll 100 percent of municipal facilities in CPA's Green Power rate option (100 percent Renewables), SCE's Green Rate option, or other available 100 percent zero carbon electricity service by 2030 and 96 percent of unincorporated Los Angeles County in CPA's Green Power rate option, SCE's Green Rate option, or other available 100 percent zero carbon electricity service by 2030 (4 percent opt-out rate).

Modeling Approach

The Measure ES2 calculations use Adjusted BAU electricity activity data and GHG emissions for residential and nonresidential uses in 2030, 2035, and 2045 as a baseline. The default participation rate in the CPA Lean and CPA Clean rate options was changed from 47 percent Clean and 48 percent Lean to 95.6 percent Green and 4.4 percent Lean by 2030 and 2035, and to 95.6 percent Green and 4.4 percent Clean by 2045. GHG emissions were calculated using the

¹⁹ "Zero-carbon electricity" means energy resources that either qualify as "renewable" in the most recent Renewables Portfolio Standard (RPS) Eligibility Guidebook or generate zero greenhouse gas emissions on-site, such as hydropower.

Measure ES2 participation rates and CPA emission factors for 2030, 2035, and 2045 (as described in B.1, *Stationary Energy*). GHG emissions after implementation of Measure ES2 were then subtracted from the Adjusted BAU forecast emissions to estimate the GHG emissions reductions produced by Measure ES2.

Assumptions

- CPA and SCE emission factors for electricity are the same as those reported in section B.1 above.
- CPA Lean and SCE emission factors are equal; the SCE emission factors are applied to the to the “Opt Out/CPA Lean” category of electricity use in unincorporated Los Angeles County.
- The overall CPA participation rate (95.6 percent) remains constant through 2045.
- Measure ES2 is the first energy measure implemented; therefore, GHG emissions reductions associated with electricity savings as calculated in subsequent energy measures incorporate Measure ES2 participation rates and electricity emission factors.

Data Sources

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021

MEASURE ES3: INCREASE RENEWABLE ENERGY PRODUCTION

Table B-18: Measure ES3 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	5,919
2035	5,219
2045	0

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure ES3 is to increase on-site solar electricity production for existing and new multifamily residential buildings, existing commercial buildings, and municipal buildings. The measure aims to install rooftop PV on 20 percent of existing multifamily residential buildings by 2030, 25 percent by 2035, and 35 percent by 2045; install rooftop solar PV on 15 percent of existing commercial buildings by 2030, 22 percent by 2035, and 32 percent by 2045; install rooftop solar PV on 80 percent of new multifamily residential buildings by 2030, 85 percent by 2035, and 95 percent by 2045; install rooftop solar PV on 40 percent of new commercial buildings by 2030, 50 percent by 2035, and 70 percent by 2045; and install 20,000 kilowatts (kW) of rooftop solar PV at county facilities. This measure also aims to install solar PV for community use and rooftop solar PV at all affordable housing developments.

Modeling Approach

Residential

GHG emissions reductions from rooftop solar PV were calculated using multifamily and single-family housing data and projections from the California Department of Finance. The baseline year for existing residential buildings is assumed to be 2023 because this is the earliest date that the 2045 CAP could be adopted and go into effect. Installation of rooftop solar PV on existing multifamily and single-family residential buildings therefore assumes a baseline year of 2023, and installation of rooftop solar PV on new multifamily residential buildings in 2030, 2035, and 2045 is based on the cumulative number of new multifamily households constructed from 2023 through each target years (e.g., the number of new multifamily residential buildings in 2030 is equal to the sum of all new multifamily housing built between 2023 and 2030).

The total number of existing and new households for each target year was then multiplied by the solar PV installation rate for each target year to obtain the number of participating households installing rooftop solar PV through implementation of Measure ES3. The average multifamily solar system size of 6.1 kW was calculated using data from Center for Sustainable Energy's *Fostering a Future for Multifamily Solar* study for the City of Santa Monica.²⁰ The average annual system electricity production (or system output) in kWh was then determined by inputting the 6.1 kW average system size into the National Renewable Energy Laboratory (NREL) PVWatts calculator for a project located in Los Angeles.²¹ The average system output was then multiplied by the number of participating households for both existing and new multifamily development to determine the total solar production (in kWh) for each target year. GHG emissions reductions were calculated by multiplying the total solar production by the relevant SCE and CPA electricity emission factors, using the same participation rates and electricity emission factors implemented under Measure ES2.

For existing single-family residential buildings, the total number of households was multiplied by the solar PV installation rate for each target year to obtain the number of participating households installing rooftop solar PV through implementation of Measure ES5. The average single-family solar system size of 6.3 kW was calculated using data from using statewide data from Berkeley Laboratory's *Tracking the Sun* database.²² The average annual system electricity production (or system output) in kWh was then determined by inputting the 6.3 kW average system size into the NREL PVWatts calculator for a project located in Los Angeles.²³ The average system output was then multiplied by the number of participating households for existing single-family development to determine the total solar production (in kWh) for each target year. GHG emissions reductions were calculated by multiplying the total solar production by the relevant SCE and CPA electricity emission factors, using the same participation rates and electricity emission factors implemented under Measure ES2.

²⁰ Center for Sustainable Energy. 2018. *Fostering a Future for Multifamily Solar in Santa Monica, CA*. February 2018. Available: <https://energycenter.org/sites/default/files/docs/nav/programs/smp/SantaMonicaMarketProfile.pdf>. Accessed November 2021.

²¹ National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: <https://pvwatts.nrel.gov/>. Accessed November 2021.

²² Berkeley Laboratory. 2021. *Tracking the Sun*. September 2021. Available: <https://emp.lbl.gov/tracking-the-sun>. Accessed November 2021.

²³ National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: <https://pvwatts.nrel.gov/>. Accessed November 2021.

Measure E6 does not include rooftop solar PV installations on new single-family residential buildings because this is already required through the current 2019 Title 24 standards and also the new 2022 Title 24 standards and is therefore accounted for in the Adjusted BAU forecast.

Commercial

GHG emissions reductions from rooftop solar PV were calculated using existing and new commercial building square footage data from UCLA.²⁴ Like residential buildings above, the baseline year for existing commercial buildings is assumed to be 2023. Installation of rooftop solar PV on existing commercial buildings therefore assumes a baseline year of 2023, and installation of rooftop solar PV on new commercial buildings in 2030, 2035, and 2045 is based on the cumulative number of new commercial square footage constructed from 2023 through each target year (e.g., the number of new commercial square footage in 2030 is equal to the sum of all new commercial square footage built between 2023 and 2030).

Similar to residential buildings, the building square footage was multiplied by the solar PV installation rate for each target year to obtain the total participating commercial square footage installing rooftop solar PV through implementation of Measure ES3. The total number of commercial solar systems was determined by dividing the participating square footage by the average square footage of a commercial building in California of 15,599 square feet.²⁵ The average commercial solar system size was estimated using statewide data from Berkeley Laboratory's *Tracking the Sun* database; this value is 137.1 kW per commercial system.²⁶ The average annual electricity production (or system output) in kWh was then determined by inputting the average system size into the NREL PVWatts calculator for a project located in Los Angeles.²⁷ The average system output was then multiplied by the number of commercial solar systems for both existing and new development to determine the total solar production (in kWh) for each target year. GHG emissions reductions were calculated by multiplying the total solar production by the relevant SCE and CPA electricity emission factors, using the same participation rates and electricity emission factors implemented under Measure ES2.

Municipal

GHG emissions reductions from municipal solar PV installations assumes that the County will install a total of 30 solar systems on County facilities, producing a total capacity of 20 MW. The average system output was then determined by inputting a 20 MW production value into the NREL PVWatts calculator for a project located in Los Angeles.²⁸ The total system output for 20 MW of solar was then multiplied by the relevant SCE and CPA electricity emission factors, using the same participation rates and emission factors implemented under Measure ES2.

²⁴ UCLA Institute of Environmental Studies. 2018. Analysis of County of Los Angeles Parcel Assessor's Data.

²⁵ Energy Information Administration. 2021. *2018 Commercial Buildings Energy Consumption Survey*. September 2021. Available: https://www.eia.gov/consumption/commercial/data/2018/pdf/CBECS_2018_Building_Characteristics_Flipbook.pdf. Accessed November 2021.

²⁶ Berkeley Laboratory. 2021. *Tracking the Sun*. September 2021. Available: <https://emp.lbl.gov/tracking-the-sun>. Accessed November 2021.

²⁷ National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: <https://pvwatts.nrel.gov/>. Accessed November 2021.

²⁸ National Renewable Energy Laboratory. 2021. PVWatts Calculator. Available: <https://pvwatts.nrel.gov/>. Accessed November 2021.

Assumptions

- CPA and SCE emission factors for electricity are the same as those reported in Section B.1 above.
- CPA participation rates after implementation of Measure ES2.
- Existing building stock represents the built environment through the year 2023.
- New building stock represents new development starting in 2025.
- The average multifamily solar PV system size is 6.1 kW; each system produces 10,067 kWh per year.
- The average single-family solar PV system size is 6.3 kW; each system produces 10,466 kWh per year.
- The average commercial building solar PV system size is 137.1 kW; each system produces 227,758 kWh per year.
- 20 MW of solar PV is installed at municipal facilities; these systems produce 36,068,108 kWh per year.
- Annual GHG emissions reductions for each target year (2030, 2035, and 2045) reflect all buildings electrified in all previous years (e.g., all buildings electrified from 2025–2030 contribute to annual emissions reductions in 2030).
- New single-family residential buildings are required to install solar PV pursuant to the 2019 and 2022 Title 24 standards.

Data Sources

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021
- California Department of Finance Demographic data
Link: <https://www.dof.ca.gov/Forecasting/Demographics/>
- UCLA analysis of County of Los Angeles Parcel Assessor's Data
Provided by UCLA Institute of Environmental Studies
- Center for Sustainable Energy, Fostering a Future for Multifamily Solar in Santa Monica, CA.
Link: <https://energycenter.org/sites/default/files/docs/nav/programs/smp/SantaMonicaMarketProfile.pdf>
- USEIA, 2018 Commercial Buildings Energy Consumption Survey
Link: https://www.eia.gov/consumption/commercial/data/2018/pdf/CBECS_2018_Building_Characteristics_Flipbook.pdf
- Berkeley Laboratory, Tracking the Sun
Link: <https://emp.lbl.gov/tracking-the-sun>
- NREL, PVWatts Calculator
Link: <https://pvwatts.nrel.gov/>

Transportation

GHG emissions reductions modeled for Measures T1, T2, T3, and T4 are based on changes to planned land use and transportation infrastructure (such as bikeways and transit) already envisioned in existing County plans and programs, such as the 2021 Housing Element Update and its Program EIR, the Los Angeles County Bike Master Plan (2012), the LA Metro NextGen Plan (2020), and LA Metro Long Range Transportation Plan (2020). The 2045 CAP does not result in any new changes to land use or transportation infrastructure than what was already analyzed in these existing plans and their CEQA documents. Consequently, the 2045 CAP merely models the GHG emissions reductions associated with the changes to land use and transportation infrastructure that were already analyzed elsewhere.

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

MEASURE T1: INCREASE DENSITY NEAR HIGH-QUALITY TRANSIT AREAS

Table B-7: Measure T1 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	27,357
2035	26,019
2045	25,276

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure T1 is to increase residential density by achieving a minimum of 20 dwelling units (DU) per acre (maximum of 30–150 DU/acre) for High Quality Transit Areas (HQTAs), locate residential and employment centers in unincorporated Los Angeles County within one mile of an HQTA, and increase the dwelling units within HQTAs by 27 percent.

Modeling Approach

VMT reductions were estimated using research documented in the 2021 California Air Pollution Control Officers Association (CAPCOA) publication *Quantifying Greenhouse Gas Mitigation Measures* (referred to herein as the “CAPCOA handbook”).²⁹ To quantify VMT reductions, appropriate equations were used based on factsheets in the CAPCOA handbook. Using data from a County GIS shapefile layer showing the 2021–2029 Housing Element Rezone Areas and a major transit stop GIS layer developed as part of the County’s SB 743 VMT Tool released in late 2020, along with CAPCOA equations, percent reductions in VMT were estimated for Measure T1. Specifically, it was assumed that the residential density within HQTAs as planned for in the 2021–2029 Housing Element would be 20 DU per acre (the Housing Element analyzed densities from 20 DU/acre to 50 du/acre) compared to the typical density value of 9.1 DU/acre, resulting in a 26.4 percent reduction in passenger vehicle VMT for affected areas. This reduction was applied to the specific home-based VMT occurring within the affected transit-oriented design (TOD) areas in unincorporated Los Angeles County.

VMT was calculated at the transportation analysis zone (TAZ) level.³⁰ Once the percent VMT reductions were determined, based on the geographic scope and VMT category of Measure T1, the appropriate VMT was aggregated across the relevant TAZs within which residential densities would increase. Percent reductions were then applied to appropriate VMT subtotals to obtain the VMT reduction estimates. The sum of these reductions was then subtracted from total light-duty

²⁹ California Air Pollution Control Officers Association. 2021. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, California Air Pollution Control Officers Association. December 2021. Available: <http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-caleemod>. Accessed January 2022.

³⁰ TAZs are comparable in size and shape to census tracts or block groups depending on the travel demand model used and level of modeling detail.

vehicle VMT to estimate adjusted daily VMT. This adjusted daily VMT was then projected to obtain VMT reductions and adjusted totals in each analysis year (2030, 2035, and 2045).

GHG reductions from Measure T1 are calculated using daily VMT reductions, as described above.³¹ The average daily VMT reductions achieved through implementation of Measure T1 were annualized by multiplying by 347 days, consistent with the GHG Inventory and Adjusted BAU forecast (see Appendix A). GHG emissions reductions were then calculated by multiplying the annual VMT reductions by the Adjusted BAU passenger vehicle emission factors for each target year as derived from EMFAC2021 (see Section B.1 above).³²

Assumptions

- The residential density within HQTAs as planned for in the County's 2021–2029 Housing Element would be 20 DU per acre.
- The typical residential density without the County's 2021 Housing Element Update is 9.1 DU per acre.
- VMT reductions apply to home-based VMT occurring within the affected TOD and HQTA areas in unincorporated Los Angeles County.
- Daily VMT reductions are annualized by multiplying by 347 days.
- Passenger vehicle category corresponds to the EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MD.

References

- County of Los Angeles GIS shapefile layer for the 2021–2029 Housing Element Rezone Areas
- Major transit stop GIS layer developed as part of the County's SB 743 VMT Tool (2020)
- California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures Link: <http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-caleemod>
- Fehr & Peers, County of Los Angeles CAP VMT Reduction Estimate Summary (February 22, 2023)
- Fehr & Peers, County of Los Angeles 2045 Climate Action Plan Update - VMT Technical Memorandum (February 23, 2023)
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>

MEASURE T2: DEVELOP LAND USE PLANS ADDRESSING JOBS-HOUSING BALANCE AND INCREASE MIXED USE

Table B-8: Measure T2 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	39,184
2035	37,267
2045	36,204

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

³¹ Fehr & Peers. 2021. County of Los Angeles CAP VMT Reduction Estimate Summary. February 22, 2023.

³² California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

Performance Objectives

The goal of Measure T2 is to increase job density to 300 jobs per acre by 2030.

Modeling Approach

To quantify VMT reductions for Measure T2, appropriate equations were used based on factsheets in the CAPCOA handbook. Using data from a County GIS shapefile layer showing the 2021–2029 Housing Element Rezone Areas and a major transit stop GIS layer developed as part of the County’s SB 743 VMT Tool released in late 2020, along with CAPCOA equations, percent reductions in VMT were estimated for Measure T2. Specifically, it was assumed that the transit mode share as planned for in the as planned for in the County’s SB 743 VMT Tool would be 27 percent compared to the typical transit mode share of 15 percent, resulting in a 31.8 percent reduction in passenger vehicle VMT for affected areas. This reduction was applied to the total VMT occurring within the affected TOD areas in unincorporated Los Angeles County.

VMT was calculated at the TAZ level. Once the percent VMT reductions were determined, based on the geographic scope and VMT category of Measure T2, the appropriate VMT was aggregated across the relevant TAZs within which transit mode shift would increase. Percent reductions were then applied to appropriate VMT subtotals to obtain the VMT reduction estimates. The sum of these reductions was then subtracted from total light-duty vehicle VMT to estimate adjusted daily VMT. This adjusted daily VMT was then projected to obtain VMT reductions and adjusted totals in each analysis year (2030, 2035, and 2045).

GHG reductions from Measure T2 are calculated using daily VMT reductions, as described above.³³ The average daily VMT reductions achieved through implementation of Measure T2 were annualized by multiplying by 347 days, consistent with the GHG Inventory and Adjusted BAU forecast (see Appendix A). GHG emissions reductions were then calculated by multiplying the annual VMT reductions by the Adjusted BAU passenger vehicle emission factors for each target year as derived from EMFAC2021 (see Section B.1 above).³⁴

Assumptions

- The transit mode share would increase from 15 percent to 27 percent under this measure, based on the County’s 2021 Housing Element Update and the County’s SB 743 VMT Tool.
- VMT reductions apply to the total VMT occurring within the affected TOD areas in unincorporated Los Angeles County.
- Daily VMT reductions are annualized by multiplying by 347 days
- Passenger vehicle category corresponds to the EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MD.

References

- County of Los Angeles GIS shapefile layer for the 2021–2029 Housing Element Rezone Areas
- Major transit stop GIS layer developed as part of the County’s SB 743 VMT Tool (2020)
- 2012 California Household Travel Survey
Link: <https://www.nrel.gov/transportation/secure-transportation-data/tsdc-california-travel-survey.html>
- California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measures
Link: <http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-caleemod>
- Fehr & Peers, County of Los Angeles CAP VMT Reduction Estimate Summary (February 22, 2023)

³³ Fehr & Peers. 2021. County of Los Angeles CAP VMT Reduction Estimate Summary, February 22, 2023.

³⁴ California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. 2021. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

- Fehr & Peers, County of Los Angeles 2045 Climate Action Plan Update – VMT Technical Memorandum (February 22, 2023)
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>

Strategy 3: Reduce Single-Occupancy Vehicle Trips

MEASURE T3: EXPAND BICYCLE AND PEDESTRIAN NETWORK TO SERVE RESIDENTIAL, EMPLOYMENT, AND RECREATIONAL TRIPS

Table B-9: Measure T3 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	0
2035	2,811
2045	2,730

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure T3 is to increase bikeway miles by 300 percent by 2035.

Modeling Approach

To quantify VMT reductions for Measure T3, appropriate equations were used based on factsheets in the CAPCOA handbook. Using data from a County GIS shapefile layer showing the 2021–2029 Housing Element Rezone Areas and the 2012 County of Los Angeles Bicycle Master Plan, along with CAPCOA equations, percent reductions in VMT were estimated for Measure T3. Specifically, it was assumed that the bikeway network as planned for in the 2012 County of Los Angeles Bicycle Master Plan would be increased by more than threefold by 2035 as compared to existing conditions, resulting in a 0.5 percent reduction in Countywide passenger vehicle VMT. This reduction was applied to the total VMT occurring within unincorporated Los Angeles County. The sum of these VMT reductions was then subtracted from total light-duty vehicle VMT to estimate adjusted daily VMT. This adjusted daily VMT was then projected to obtain VMT reductions and adjusted totals in each analysis year (2030, 2035, and 2045).

GHG reductions from Measure T3 are calculated using daily VMT reductions, as described above.³⁵ The average daily VMT reductions achieved through implementation of Measure T3 were annualized by multiplying by 347 days, consistent with the GHG Inventory and Adjusted BAU forecast (see Appendix A). GHG emissions reductions were then calculated by multiplying

³⁵ Fehr & Peers. 2021. County of Los Angeles CAP VMT Reduction Estimate Summary, February 22, 2023.

the annual VMT reductions by the Adjusted BAU passenger vehicle emission factors for each target year as derived from EMFAC2021 (see Section B.1 above).³⁶

Assumptions

- The County's bikeway network as planned for in the 2012 County of Los Angeles Bicycle Master Plan would be increased by more than threefold by 2035 as compared to existing conditions.
- The reduction in VMT applies to the total VMT occurring within unincorporated Los Angeles County.
- Daily VMT reductions are annualized by multiplying by 347 days.
- Passenger vehicle category corresponds to EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MD.

References

- County of Los Angeles GIS shapefile layer for the 2021–2029 Housing Element Rezone Areas
- 2012 County of Los Angeles Bicycle Master Plan
Link: <https://pw.lacounty.gov/tpp/bike/masterplan.cfm>
- California Air Pollution Control Officers Association, Quantifying Greenhouse Gas Mitigation Measure
Link: <http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-caleemod>
- Fehr & Peers, County of Los Angeles CAP VMT Reduction Estimate Summary (February 23, 2023)
- Fehr & Peers, County of Los Angeles 2045 Climate Action Plan Update - VMT Technical Memorandum (February 23, 2023)
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>

MEASURE T4: BROADEN OPTIONS FOR TRANSIT, ACTIVE TRANSPORTATION, AND ALTERNATIVE MODES OF TRANSPORTATION

Table B-10: Measure T4 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	11,465
2035	10,904
2045	10,593

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure T4 is to, by 2030, double transit service hours from 560,000 to 1.12 million hours, install bus-only lanes on all major transit thoroughfares, and that 75 percent of unincorporated Los Angeles County residents will live within one-half mile of shuttle or mobility service. Measure T4 has several additional performance goals, such as that all transit corridors will have micro mobility service and to prioritize micro mobility along equity areas and high-quality transit corridors.

³⁶ California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

Modeling Approach

To quantify VMT reductions for Measure T4, appropriate equations were used based on factsheets in the CAPCOA handbook. VMT reductions and associated GHG emissions reductions were quantified for two separate implementing actions that support Measure T4: Action T4.1 (Expand and improve frequency of County shuttles and explore new mobility services, such as micro transit, autonomous vehicles, micro mobility, and on-demand autonomous shuttles) and Action T4.2 (Install bus-only lanes and signal prioritization along major thoroughfares, and work with transit agencies and neighboring jurisdictions to plan and install full bus rapid transit infrastructure along priority corridors, as appropriate).

VMT reductions from Action T4.1 were calculated using a major transit stop GIS layer developed as part of the County's SB 743 VMT Tool released in late 2020 and information from the LA Metro NextGen Bus Plan (2020) and the LA Metro Long Range Transportation Plan (2020), along with CAPCOA equations. Specifically, the transit mode share of 4.6 percent per the 2012 California Household Travel Survey was used, and it was assumed that implementation of Action T4.1 would increase the total number of transit service hours in unincorporated Los Angeles County from 560,000 to 1.12 million after transit expansion. This value is based on the Metro NextGen report. This increase in transit service hours would result in a 1.9 percent reduction in Countywide passenger vehicle VMT. This reduction was applied to the total VMT occurring within unincorporated Los Angeles County. This VMT reduction was then subtracted from total light-duty vehicle VMT to estimate adjusted daily VMT. This adjusted daily VMT was then projected to obtain VMT reductions and adjusted totals in each analysis year (2030, 2035, and 2045).

VMT reductions from Action T4.2 were calculated using a major transit stop GIS layer developed as part of the County's SB 743 VMT Tool released in late 2020 and information from the LA Metro NextGen Plan and LA Metro Long Range Transportation Plan, along with CAPCOA equations. Specifically, the transit mode share of 4.6 percent per the 2012 California Household Travel Survey was used, and it was assumed that implementation of Action T4.2 would result in 100 percent of all transit routes in unincorporated Los Angeles County will receive bus-only lanes, signal prioritization along major thoroughfares, and full bus rapid transit infrastructure along priority corridors. This value is based on the LA Metro NextGen Plan and LA Metro Long Range Transportation Plan. This infrastructure would result in a 0.6 percent reduction in total VMT occurring in unincorporated Los Angeles County's TOD areas and HQTAs. VMT was calculated at the TAZ level. Once the percent VMT reductions were determined, based on the geographic scope and VMT category of Measure T4.2, the appropriate VMT was aggregated across the relevant TAZs within which transit mode shift would increase. Percent reductions were then applied to appropriate VMT subtotals to obtain the VMT reduction estimates. The sum of these reductions was then subtracted from total light-duty vehicle VMT to estimate adjusted daily VMT. This adjusted daily VMT was then projected to obtain VMT reductions and adjusted totals in each analysis year (2030, 2035, and 2045).

GHG reductions from Measure T4 are calculated using daily VMT reductions, as described above.³⁷ The average daily VMT reductions achieved through implementation of Measure T4 were annualized by multiplying by 347 days, consistent with the GHG Inventory and Adjusted BAU forecast (see Appendix A). GHG emissions reductions were then calculated by multiplying

³⁷ Fehr & Peers. 2021. County of Los Angeles CAP VMT Reduction Estimate Summary, February 22, 2023.

the annual VMT reductions by the Adjusted BAU passenger vehicle emission factors for each target year as derived from EMFAC2021 (see Section B.1 above).³⁸

Assumptions

- The baseline transit mode share is 4.6 percent, per the 2012 California Household Travel Survey.
- For Action T4.1, the total number of transit service hours in unincorporated Los Angeles County would increase from 560,000 to 1.12 million after transit expansion.
- For Action T4.1, the reduction in VMT applies to the total VMT occurring within unincorporated Los Angeles County.
- For Action T4.2, 100 percent of all transit routes in unincorporated Los Angeles County will receive bus-only lanes, signal prioritization along major thoroughfares, and full bus rapid transit infrastructure along priority corridors.
- For Action T4.2, VMT reductions apply to the relevant TAZs within which transit mode shift would increase.
- Daily VMT reductions are annualized by multiplying by 347 days.
- Passenger vehicle category corresponds to the EMFAC vehicle categories LDA, LDT1, LDT2, MCY, and MD.

References

- County of Los Angeles GIS shapefile layer for the 2021–2029 Housing Element Rezone Areas
- Major transit stop GIS layer developed as part of the County's SB 743 VMT Tool (2020)
- LA Metro 2020 Long Range Transportation Plan, March 2020.
Link: <https://www.metro.net/about/plans/long-range-transportation-plan/>
- LA Metro NextGen Bus Plan, October 2020
Link: <https://www.metro.net/about/plans/nextgen-bus-plan/>
- 2012 California Household Travel Survey
Link: <https://www.nrel.gov/transportation/secure-transportation-data/tsdc-california-travel-survey.html>
- California Air Pollution Control Officers Association, *Quantifying Greenhouse Gas Mitigation Measures*
Link: <http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-calemod>
- Fehr & Peers, County of Los Angeles CAP VMT Reduction Estimate Summary (February 22, 2023)
- Fehr & Peers, County of Los Angeles 2045 Climate Action Plan Update - VMT Technical Memorandum (February 22, 2023)
- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>

Strategy 4: Institutionalize Low-Carbon Transportation

MEASURE T6: INCREASE ZEV MARKET SHARE AND REDUCE GASOLINE AND DIESEL FUEL SALES

Table B-11: Measure T6 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	482,515
2035	820,125
2045	1,535,101

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

³⁸ California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

Description

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

Performance Objectives

The goal of Measure T6 is to increase the total amount of light-duty vehicles in unincorporated Los Angeles County that are ZEVs to 30 percent by 2030, 50 percent by 2035, and 90 percent by 2045; to increase the sales of new light-duty vehicles in unincorporated Los Angeles County that are ZEVs to 68 percent by 2030 and 100 percent by 2035; to install 38,000 total new public and private shared EVCS (including EVCS at County facilities and properties) by 2030, 74,000 total new EVCS by 2035, and 140,000 total new EVCS by 2045; and to install 5,000 total new EVCS at County facilities and properties, 10,000 total new EVCS by 2035, and 25,000 total new EVCS by 2045.

Modeling Approach

The Measure T6 calculations use Adjusted BAU GHG emissions from passenger vehicles as a baseline. To calculate the portion of the passenger vehicle fleet that are ZEVs under Measure T6, the passenger vehicle electrification performance goals for each future year were applied to the total vehicle population and Countywide VMT outputs of the applicable EMFAC2021 model passenger vehicle types (LDA, LDT1, LDT2, MCY, and MDV). The remaining non-ZEV population and Countywide VMT by fuel type (diesel, gasoline, and plug-in hybrid) was distributed proportionally for each vehicle type based on Countywide fuel type distribution data from EMFAC2021. The adjusted ZEV population and VMT values with implementation of Measure T6 were then factored back in to the VMT-weighted emission factor calculations used for the Adjusted BAU forecast (see section B.2 above) to calculate new fleetwide vehicle emission rates under Measure T6. The recalculated weighted emission factors for passenger vehicles were then applied to the total passenger vehicle VMT by year to estimate GHG emissions with implementation of Measure T6.

Electric vehicle miles traveled (e-VMT) were then calculated for the Adjusted BAU forecast and for the scenario with implementation of Measure T6 by multiplying the total passenger vehicle VMT for each year by the electric vehicle share under each scenario. The e-VMT was then multiplied by electricity factors (kWh/mile) derived from EMFAC2021 to determine the total electricity consumption from electric vehicles. GHG emissions associated with this electricity use were estimated using the same participation rates and emission factors implemented under Measure ES2, as described below. Total GHG emissions reductions from Measure T6 were calculated by subtracting GHG emissions associated with Measure T6 implementation for passenger vehicles and electric vehicle charging from GHG emissions under the Adjusted BAU forecast for passenger vehicles and electric vehicle charging.

Measure T6 substantially reduces GHG emissions in the county; this measure is the most effective measure in the 2045 CAP.

Assumptions

- Increased electric vehicle adoption displaces all other vehicle types (diesel, gasoline, plug-in hybrid) and non-ZEV VMT is redistributed proportional to each fuel type's share of total population and VMT (from EMFAC2011).
- The efficiency of electric vehicles remains constant throughout all future years.

- The County passenger fleet vehicle population remains constant through 2045.
- CPA and SCE emission factors for electricity are the same as those reported in section B.1 below.
- CPA participation rates after implementation of Measure ES2.

Data Sources

- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>
- Alternative Fuels Data Center, Annual Average VMT per Vehicle
Link: <https://afdc.energy.gov/data/10309>
- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021

MEASURE T7: ELECTRIFY COUNTY FLEET VEHICLES

Table B-12: Measure T7 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	29,743
2035	24,335
2045	10,119

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goals of this measure are to increase the total amount of light-duty vehicles in the County-owned fleet that are ZEVs to 35 percent by 2030, 60 percent by 2035, and 100 percent by 2045; to electrify the entire County bus and shuttle fleet by 2035; and to electrify 15 of the County's inmate buses by 2030, 30 inmate buses by 2035, and 68 inmate buses by 2045.

Modeling Approach

GHG emissions reductions associated with electrification of County passenger fleet vehicles were calculated for Measure T7. The total number of County fleet passenger vehicles was provided by the County's Internal Services Department (ISD).³⁹ Total VMT for these vehicles were estimated based on an annual average VMT per vehicle from the Alternative Fuels Data Center.⁴⁰ This average VMT value was then multiplied by the number of vehicles to estimate the total annual VMT for County fleet passenger vehicles. The baseline (Adjusted BAU) e-VMT was estimated based on the number of electric vehicle purchases in fiscal year 2019–20 as a percentage of total passenger fleet vehicles from the County's Annual Clean Fuel Sustainability Report. e-VMT under implementation of Measure T6 was estimated using the total passenger fleet vehicle VMT and electric vehicle fleet goals specific to the County fleet (35 percent by 2030, 60 percent by 2035,

³⁹ County of Los Angeles Internal Services Department. 2021. *Annual Clean Fuel Sustainability Report*.

⁴⁰ Alternative Fuels Data Center. 2020. Annual Average VMT per Vehicle. February 2020. Available: <https://afdc.energy.gov/data/10309>. Accessed November 2021.

and 100 percent by 2045). GHG emissions for electrified passenger fleet vehicles with implementation of Measure T6 were then calculated by multiplying total VMT by adjusted VMT-weighted emission factors from EMFAC2021 using the same method as discussed above for the Countywide fleet, scaled to match the light-duty fleet electrification performance objectives of this measure. These emissions were subtracted from the Adjusted BAU forecast GHG emissions for the County passenger vehicle fleet in order to estimate GHG emissions reductions for Measure T7 for county light-duty fleet vehicles. Only the portion of GHG emissions reductions for county fleet vehicles that exceed the ZEV goals of Measure T6 were included in Measure T7, to avoid double-counting the effects of Measure T6 on the county-owned fleet.

The Measure T7 calculations use Adjusted BAU fuel use and GHG emissions from public transit buses as a baseline. Measure T7 assumes a 100 percent electrification rate of all County fleet buses by 2030. To calculate GHG emissions reductions associated with Measure T7, fuel use from diesel, gasoline, and compressed natural gas under the Adjusted BAU forecast was converted to electricity using specific energy effectiveness ratios (EERs) by fuel type and conversion factors from gallons to British thermal units (Btu) and Btu to electricity use.^{41,42} The EERs account for the change in vehicle energy efficiency when substituting one fuel for another. GHG emissions associated with implementation of Measure T7 were calculated using the same participation rates and emission factors implemented under Measure ES2, as discussed below. GHG emissions after implementation of Measure T7 were then subtracted from the Adjusted BAU GHG emissions to estimate the emissions reductions from Measure T7.

Measure T7 also includes electrification of the County's inmate bus fleet. The total number of inmate buses in the County's fleet (88) was provided by the Los Angeles County Sheriff's Department.⁴³ Annual VMT for the County's inmate bus fleet was estimated based on an annual average VMT value of 12,000 per bus from the Alternative Fuels Data Center.⁴⁴ The average inmate bus VMT was then multiplied by the total number of inmate buses to estimate the total annual VMT for inmate buses. The baseline e-VMT was assumed to be zero given that the Sheriff's Department does not currently operate any electric inmate buses. e-VMT from implementation of Measure T7 was determined using data provided by the Los Angeles County Sheriff's Department on planned electrification of the inmate bus fleet: 15 buses electrified by 2030, 30 buses electrified by 2035, and 68 buses electrified by 2045.⁴⁵ GHG emissions associated with the electrification of inmate buses under Measure T7 were calculated using weighted average bus emission factors from EMFAC2021 multiplied by the annual diesel VMT and e-VMT; these emissions were then subtracted from the GHG emissions in the Adjusted BAU forecast to determine emissions reductions.

⁴¹ Navius Research. 2018. *Analysis of Energy Effectiveness Ratios for Light- and Heavy-Duty Vehicles*. November 6, 2018. Available: <https://www.naviusresearch.com/wp-content/uploads/2018/11/BC-EER-Review-Final-Report-2018-11-06.pdf>. Accessed November 2021.

⁴² Alternative Fuels Data Center. 2021. Fuel Properties. January 2021. Available: <https://afdc.energy.gov/fuels/properties>. Accessed November 2021.

⁴³ County of Los Angeles Internal Services Department. 2021. *Annual Clean Fuel Sustainability Report*.

⁴⁴ Alternative Fuels Data Center. 2020. Annual Average VMT per Vehicle. February 2020. Available: <https://afdc.energy.gov/data/10309>. Accessed November 2021.

⁴⁵ Los Angeles County Sheriff's Department email correspondence (2021).

Assumptions

- The County passenger fleet vehicle annual average VMT per vehicle value of 11,467 remains constant through 2045.
- Complete electrification of the transit bus fleet by 2030.
- CPA and SCE emission factors for electricity are the same as those reported in section B.1 below.
- CPA participation rates after implementation of Measure ES2.
- EERs applied to each non-electric fuel type to convert to electricity.
- The County inmate bus fleet vehicle annual average VMT per bus value of 12,000 remains constant through 2045.

References

- County of Los Angeles Internal Services Department, Annual Clean Fuel Sustainability Report, 2021.
- Navius Research, Analysis of Energy Effectiveness Ratios for Light- and Heavy-Duty Vehicles
Link: <https://www.naviusresearch.com/wp-content/uploads/2018/11/BC-EER-Review-Final-Report-2018-11-06.pdf>.
- Alternative Fuels Data Center, Fuel Properties.
Link: <https://afdc.energy.gov/fuels/properties>. Accessed November 2021.
- County of Los Angeles Internal Services Department, Annual Clean Fuel Sustainability Report, 2021.
- Alternative Fuels Data Center, Annual Average VMT per Vehicle
Link: <https://afdc.energy.gov/data/10309>.
- Los Angeles County Sheriff's Department email correspondence (2021)
- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxs3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxs3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021

MEASURE T8: ACCELERATE FREIGHT DECARBONIZATION

Table B-13: Measure T8 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	86,168
2035	103,528
2045	176,638

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of this measure is to achieve a total market share of ZEVs for medium- and heavy-duty vehicles of 40 percent by 2030, 60 percent by 2035, and 90 percent by 2045; transition 50 percent of medium- and heavy-duty vehicles in the County-owned fleet to ZEVs by 2030, 70 percent by 2035, and 95 percent by 2045; ensure that 100 percent of the drayage truck fleet is ZEV by 2035; ensure that 100 percent of sales of medium- and heavy-duty trucks are ZEV by

2045; require that all new warehouse loading docks have EVCS by 2030; and require that all existing warehouse loading docks have EVCS by 2030.

Modeling Approach

The Measure T8 calculations use Adjusted BAU GHG emissions from medium- and heavy-duty trucks as a baseline. To calculate the portion of the medium- and heavy-duty truck fleet that are ZEVs under Measure T8, the truck electrification performance goals for each future year were applied to the total vehicle population and Countywide VMT outputs of the applicable EMFAC2021 model medium- and heavy-duty vehicle types (LHDT1, LHDT2, MHDT, HHDT, and MH). The remaining non-ZEV population and Countywide VMT by fuel type (diesel, gasoline, and natural gas) was distributed proportionally for each vehicle type based on Countywide fuel type distribution data from EMFAC2021. The adjusted ZEV population and VMT values with implementation of Measure T8 were then factored back into the VMT-weighted emission factor calculations used for the Adjusted BAU forecast (see section B.2 above) to calculate new fleetwide vehicle emission rates under Measure T8. The recalculated weighted emission factors for trucks were then applied to the total medium- and heavy-duty truck VMT by year to estimate GHG emissions with implementation of the Measure T8.

The e-VMT were then calculated for the Adjusted BAU forecast and for the scenario with implementation of Measure T8 by multiplying the total medium- and heavy-duty truck VMT for each year by the electric vehicle share under each scenario.⁴⁶ The e-VMT was then multiplied by electricity factors (kWh/mile) derived from EMFAC2021 to determine the total electricity consumption from electric vehicles. GHG emissions associated with this electricity use were estimated using the same participation rates and emission factors implemented under Measure ES2, as described below. Total GHG emissions reductions from Measure T8 were calculated by subtracting GHG emissions associated with Measure T8 implementation for medium- and heavy-duty trucks and electric vehicle charging from GHG emissions under the Adjusted BAU forecast for medium- and heavy-duty trucks and electric vehicle charging.

GHG emissions reductions associated with electrification of the County's medium- and heavy-duty fleet vehicles were also calculated for Measure T8. The total number of County fleet medium- and heavy-duty trucks was provided by ISD.⁴⁷ Total VMT for these vehicles were estimated based on an annual average VMT per truck from the Alternative Fuels Data Center.⁴⁸ This average VMT value was then multiplied by the number of trucks to estimate the total annual VMT for the County's medium- and heavy-duty fleet vehicles. The baseline (Adjusted BAU) e-VMT was estimated based on the number of electric truck purchases in fiscal year 2019–20 as a percentage of total medium- and heavy-duty fleet vehicles from the County's Annual Clean Fuel Sustainability Report. e-VMT under implementation of Measure T8 was estimated using the total medium- and heavy-duty fleet vehicle VMT and electric truck fleet goals specific to the County fleet (60 percent by 2030, 80 percent by 2035, and 95 percent by 2045). GHG emissions for electrified medium- and heavy-duty fleet vehicles with implementation of Measure T8 were then calculated by multiplying total VMT by adjusted VMT-weighted emission factors from EMFAC2011 using the same method as discussed above for the Countywide fleet. These

⁴⁶ California Air Resources Board. 2021. EMFAC2021 Model. Version v1.0.1. Available: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>. Accessed October 2021.

⁴⁷ County of Los Angeles Internal Services Department. 2021. *Annual Clean Fuel Sustainability Report*.

⁴⁸ Alternative Fuels Data Center. 2020. Annual Average VMT per Vehicle. February 2020. Available: <https://afdc.energy.gov/data/10309>. Accessed November 2021.

emissions were subtracted from the Adjusted BAU forecast GHG emissions for the County's medium- and heavy-duty vehicle fleet to estimate GHG emissions reductions for Measure T8 for County fleet vehicles.

Assumptions

- Increased electric vehicle adoption displaces all other vehicle types (diesel, gasoline, natural gas) and VMT is redistributed proportional to the fuel type's share of total population and VMT.
- The County's medium- and heavy-duty fleet vehicle population remains constant through 2045.
- The County's medium- and heavy-duty fleet vehicle annual average VMT per vehicle value of 16,326 remains constant through 2045.
- CPA and SCE emission factors for electricity are the same as those reported in section B.1 above.
- CPA participation rates after implementation of Measure ES2.

Data Sources

- EMFAC2021 Model, v1.0.1
Link: <https://arb.ca.gov/emfac/emissions-inventory/4c9f04282a1f85d62a27721058b5a3bb6fd22fb9>
- County of Los Angeles Internal Services Department, Annual Clean Fuel Sustainability Report, 2021
- Alternative Fuels Data Center, Annual Average VMT per Vehicle
Link: <https://afdc.energy.gov/data/10309>.
- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021

MEASURE T9: EXPAND USE OF ZERO-EMISSION TECHNOLOGIES FOR OFF-ROAD VEHICLES AND EQUIPMENT

Table B-14: Measure T9 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	8,373
2035	21,819
2045	44,964

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of this measure is to increase the total amount of off-road fleet and equipment in unincorporated Los Angeles County that are ZEVs to 20 percent by 2030, 50 percent by 2035, and 95 percent by 2045; and to increase the fleetwide percentage of construction, agriculture, and manufacturing equipment in unincorporated Los Angeles County that are ZEVs to 50 percent by 2030, 75 percent by 2035, and 100 percent by 2045.

Modeling Approach

The Measure T9 calculations use Adjusted BAU off-road vehicle fuel consumption and GHG emissions as a baseline for estimating GHG emissions reductions. Measure T9 aims to electrify unincorporated Los Angeles County's off-road vehicles and equipment by an increasing percentage in each future year. To calculate GHG emissions reductions associated with Measure T9, fuel use from diesel, gasoline, and compressed natural gas under the Adjusted BAU forecast was multiplied by electrification rates by target year and then converted to electricity using specific EERs by fuel type and conversion factors from gallons to Btu and Btu to electricity use.^{49,50} GHG emissions from electricity under Measure T9 were calculated using the same participation rates and emission factors implemented under Measure ES2, as discussed below. Diesel, gasoline, and natural gas GHG emissions were calculated using emission factors derived from CARB's OFFROAD2017 ORION model.⁵¹ GHG emissions after implementation of Measure T9 were then subtracted from the Adjusted BAU GHG emissions to estimate the emissions reductions from Measure T9.

Assumptions

- Natural gas-fueled equipment is not displaced by electric equipment.
- CPA and SCE emission factors for electricity are the same as those reported in section B.1 below.
- CPA participation rates after implementation of Measure ES2.
- EERs applied to each non-electric fuel type to convert to electricity.

References

- CARB OFFROAD ORION Model
Link: <https://arb.ca.gov/emfac/>
- Navis Research, Analysis of Energy Effectiveness Ratios for Light- and Heavy-Duty Vehicles
Link: <https://www.navisresearch.com/wp-content/uploads/2018/11/BC-EER-Review-Final-Report-2018-11-06.pdf>.
- Alternative Fuels Data Center, Fuel Properties.
Link: <https://afdc.energy.gov/fuels/properties>. Accessed November 2021.
- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021

Building Energy and Water

Building Energy and Water Measure Order of Implementation

To avoid double counting GHG emissions reductions for measures that reduce emissions in building energy and water, these measures account for overlapping effects. For example, Measure ES2 (Procure Zero Carbon Electricity) is implemented first and includes electricity emission factors and CPA participation rates that are applied through the remaining building

⁴⁹ Navis Research. 2018. *Analysis of Energy Effectiveness Ratios for Light- and Heavy-Duty Vehicles*. November 6, 2018. Available: <https://www.navisresearch.com/wp-content/uploads/2018/11/BC-EER-Review-Final-Report-2018-11-06.pdf>. Accessed November 2021.

⁵⁰ Alternative Fuels Data Center. 2021. Fuel Properties. January 2021. Available: <https://afdc.energy.gov/fuels/properties>. Accessed November 2021.

⁵¹ California Air Resources Board. 2018. OFFROAD ORION. Available: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools>. Accessed January 2021.

energy and water measures. Further, each measure’s baseline activity data (i.e., electricity and natural gas consumption) are affected by the ordering of the measures. For example, grid electricity savings from solar production under Measure ES3 (Increase Renewable Energy Production) are subtracted from the adjusted BAU electricity activity data for the relevant building sector and the resulting electricity usage is used as the new “baseline” activity data for the next measure, Measure E4 (Improve Energy Efficiency of Existing Buildings). After Measure E4 is implemented, the new “baseline” activity data are recalculated and used as the new “baseline” total electricity usage for Measure E1 (Decarbonize Existing Buildings). For calculation purposes, measures were assumed to be implemented in the following order:

1. Measure ES2: Procure Zero Carbon Electricity
2. Measure ES3: Increase Renewable Energy Production
3. Measure E4: Improve Energy Efficiency of Existing Buildings
4. Measure E1: Decarbonize Existing Buildings
5. Measure E2: Standardize All-Electric New Development
6. Measure E5: Increase Use of Recycled Water and Gray Water Systems

Note that Measure E2 (Decarbonize New Development) is independent of the other measures because it exclusively applies to new development and therefore does not use the same baseline activity data as the other measures.

Strategy 5: Decarbonize Buildings

MEASURE E1: DECARBONIZE EXISTING BUILDINGS

Table B-16: Measure E1 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	176,072
2035	280,988
2045	477,221

*Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.*

Description

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

Performance Objectives

The goal of Measure E1 is to decarbonize 25 percent of all existing residential buildings by 2030, 40 percent by 2035, and 80 percent by 2045; to decarbonize 15 percent of all existing nonresidential buildings by 2030, 25 percent by 2035, and 60 percent by 2045; and to require Zero Net Energy (ZNE) for 50 percent of all major renovations by 2030, 75 percent by 2035, and 100 percent by 2045. Measure E1 has several additional performance goals, including adopting building performance standards and reach code(s), requiring all major retrofits and renovations to be electric-ready, adopting a ZNE ordinance, electrify County facilities to the maximum extent feasible, retrofit affordable housing units for efficiency, decarbonization, and resilience, and to ensure low-income households do not experience rent increases as result of first cost.

Modeling Approach

The performance objectives were derived using SCE's Pathway to 2045 Whitepaper electrification targets, as stated in Table 1 of the whitepaper's appendices. Targets are identified for the space and water heating end uses for both residential and commercial buildings. Using data from the 2012 Commercial Buildings Energy Consumption Survey (CBECS) and the 2015 Residential Energy Consumption Survey (RECS), these end use decarbonization targets were adjusted to overall residential and nonresidential natural gas consumption for buildings in the "Mixed-dry/Hot-dry" climate region as defined by the U.S. Energy Information Administration (which includes Los Angeles County).⁵²

The Measure E1 calculations use the activity data (electricity and natural gas) and GHG emissions for existing residential and nonresidential land uses after implementation of Measure ES2 (Procure Zero Carbon Electricity) as a baseline. The baseline year for existing development is assumed to be 2023 because this is the earliest date that the 2045 CAP could be adopted and go into effect. In other words, Measure E1 would apply to the built environment through the end of 2022. Electricity use was used as a proxy for building decarbonization (i.e., it was assumed that decarbonization means switching from fossil natural gas to zero-carbon electricity). Electricity emissions before implementation of Measure E1 were calculated using the same participation rates and emission factors implemented under Measure ES2. To calculate the reduction in natural gas use and increase in electricity use under Measure E1, natural gas use in applicable buildings was converted to electricity use by multiplying the number of therms consumed by the electrification percentage for each building type (residential and nonresidential) for each target year, and then converting the displaced natural gas to electricity using a standard conversion factor of 29.3 kWh per therm.⁵³ GHG emissions after implementation of Measure E1 were then calculated using the same participation rates and emission factors implemented under Measure E1 and subtracted from the post-ES2 emissions to estimate the GHG reductions produced by Measure E1.

Assumptions

- Performance goals are based on SCE's Pathway to 2045 Whitepaper electrification goals for residential and commercial space and water heating, adjusted to average end use profiles for natural gas energy

⁵² For example, the SCE Pathway targets are 36 percent electric commercial space heating and 7 percent electric commercial water heating by 2035; in the Mixed-dry/Hot-dry climate region, space heating represents 35 percent of total commercial natural gas use and water heating represents 31 percent of total commercial natural gas use; the calculation for the total commercial building electrification target is 36 percent * 35 percent + 7 percent * 31 percent = 15 percent.

⁵³ UC Irvine Physics and Astronomy. 2021. Energy Units and Conversions. Available: <https://www.physics.uci.edu/~silverma/units.html>. Accessed November 2021.

consumption in residential and commercial buildings in the “Mixed-dry/Hot-dry” climate region; the 2045 performance goals were further adjusted to help unincorporated Los Angeles County achieve its 2045 emissions reduction target.

- CPA and SCE emission factors for electricity are the same as those reported in section B.1 above.
- CPA participation rates after implementation of Measure ES2.
- Electricity use was used as a proxy for building decarbonization (i.e., decarbonization means switching from fossil natural gas to zero-carbon electricity).
- There is no efficiency loss when converting natural gas to electricity.
- Existing development represents emissions and activity data in 2023.

Data Sources

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtq4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtq4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021
- Southern California Edison, Pathway 2045 Appendices, Table 1
Link: <https://www.edison.com/home/our-perspective/pathway-2045.html>
- U.S. Energy Information Administration, 2012 Commercial Buildings Energy Consumption Survey (CBECS), Table E7
Link: <https://www.eia.gov/consumption/commercial/data/2012/index.php?view=consumption#e1-e11>
- U.S. Energy Information Administration, 2015 Residential Energy Consumption Survey (RECS), Table CE4.5
Link: <https://www.eia.gov/consumption/residential/data/2015/index.php?view=consumption#undefined>
- UC Irvine Physics and Astronomy, Energy Units and Conversions
Link: <https://www.physics.uci.edu/~silverma/units.html>
- Climate Registry
Link: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf> (the 2018 document was the latest available at the time the inventories were prepared)

MEASURE E2: DECARBONIZE NEW DEVELOPMENT

Table B-17: Measure E2 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	7,452
2035	12,588
2045	22,639

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

This measure aims to electrify all new buildings.

Performance Objectives

The goal of Measure E2 is to decarbonize all applicable new residential and nonresidential buildings by 2030 and that most new development will be ZNE by 2030. For modeling purposes, the goal is to decarbonize 90 percent of new residential buildings (single-family and multifamily) by 2030, 95 percent by 2035, and 100 percent by 2045; and to electrify 90 percent of new nonresidential buildings (except large industry and food service) by 2030, 95 percent by 2035, and 100 percent by 2045. Measure E2 also has the performance goals that 90 percent of new

residential buildings will be ZNE by 2030, 90 percent of new nonresidential buildings (except large industry) will be ZNE by 2030, and that all new development will be electric-ready.

Modeling Approach

The Measure E2 calculations use Adjusted BAU activity data (electricity and natural gas) and GHG emissions after implementation of Measure ES2 for new residential and nonresidential land uses as a baseline. New residential and nonresidential energy use was calculated by multiplying the new building square footage⁵⁴ by the EUI for each land use type (single-family residential, multifamily residential, commercial, and manufacturing/industrial). GHG emissions for new development were then calculated using the same participation rates and emission factors implemented under Measure ES2. Electricity use was used as a proxy for building decarbonization (i.e., it was assumed that decarbonization means switching from fossil natural gas to zero-carbon electricity). To calculate the reduction in natural gas use and increase in electricity use under Measure E2, natural gas use in applicable buildings was converted to electricity use by multiplying the number of therms consumed by the electrification percentage for each building type (residential and nonresidential) for each target year and then converting the displaced natural gas to electricity using a standard conversion factor of 29.3 kWh per therm.⁵⁵ GHG emissions after implementation of Measure E2 were then calculated using the same participation rates and emission factors implemented under Measure ES2 and subtracted from the post-ES2 emissions to estimate the GHG reductions produced by Measure E2. Electrification of new development starts in 2025 and emissions reductions in each of the target years are calculated as cumulative reductions; for example, total annual GHG emissions reductions in 2030 account for all new building electrification for the years 2025 through 2030.

Assumptions

- CPA and SCE emission factors for electricity are the same as those reported in Section B.1 above.
- CPA participation rates after implementation of Measure ES2.
- Electricity use was used as a proxy for building decarbonization (i.e., decarbonization means switching from fossil natural gas to zero-carbon electricity).
- There is no efficiency loss when converting natural gas to electricity.
- Decarbonization of new development begins in 2025.
- Annual GHG emissions reductions for each target year (2030, 2035, and 2045) reflect all buildings electrified in all previous years (e.g., all buildings electrified from 2025–2030 contribute to annual emissions reductions in 2030).

Data Sources

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxs3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxs3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021
- UCLA analysis of County of Los Angeles Parcel Assessor's Data
Provided by UCLA Institute of Environmental Studies
- UC Irvine Physics and Astronomy, Energy Units and Conversions
Link: <https://www.physics.uci.edu/~silverma/units.html>

⁵⁴ UCLA Institute of Environmental Studies. 2018. Analysis of County of Los Angeles Parcel Assessor's Data.

⁵⁵ UC Irvine Physics and Astronomy. 2021. Energy Units and Conversions. Available: <https://www.physics.uci.edu/~silverma/units.html>. Accessed November 2021.

- Climate Registry
Link: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf> (the 2018 document was the latest available at the time the inventories were prepared)

Strategy 6: Improve Energy Efficiency of Existing Buildings

MEASURE E4: IMPROVE ENERGY EFFICIENCY OF EXISTING BUILDINGS

Table B-19: Measure E4 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	22,274
2035	41,255
2045	203,455

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

Retrofit existing building stock to reduce overall County energy use.

Performance Objectives

The goal of Measure E4 is to improve the energy efficiency of existing residential and nonresidential buildings by reducing the energy use intensity (EUI) of existing buildings in unincorporated Los Angeles County below 2015 levels as follows: 20 percent for residential, 15 percent for industrial, and 25 percent for commercial by 2030; 25 percent for residential, 25 percent for industrial, and 35 percent for commercial by 2035; and 50 percent for residential, 50 percent for industrial, and 50 percent for commercial by 2045.

Modeling Approach

The Measure E4 calculations use the activity data (electricity and natural gas) and GHG emissions for existing residential and nonresidential land uses after implementation of Measure ES2 (Procure Zero Carbon Electricity) and Measure ES3 (Increase Renewable Energy Production) as a baseline. The baseline year for existing development is assumed to be 2023 because that is the earliest date that the 2045 CAP could be adopted and go into effect. In other words, Measure E4 would apply to the built environment through the end of 2022. This new “baseline” energy use was then multiplied by an assumed eligibility rate (i.e., the portion of buildings eligible for retrofits [based on building vintage, incentives available, income level, etc.]) and then by the participation rate (i.e., the portion of eligible residential and nonessential buildings actually performing a retrofit) to determine the total building energy usage subject to energy retrofits under Measure E4. Electricity and natural gas savings resulting from implementation of Measure E4 were then calculated by multiplying these energy usage values (electricity and natural gas) by the percent improvement in EUI for each target year under Measure E4 implementation. Electricity and natural gas emissions before implementation of Measure E4 were calculated using the same participation rates and emission factors implemented under Measure ES2 and Measure ES3. GHG emissions after implementation of Measure E4 were then calculated using the same participation rates and emission factors implemented under Measure ES2 and Measure ES3 and subtracted from the post-ES3 emissions to estimate the GHG

reductions produced by Measure E4. GHG emissions for natural gas savings were calculated using the emission factors of 0.00531 MTCO₂e per therm for residential and commercial buildings and 0.00532 MTCO₂e per therm for industrial buildings.

Assumptions

- CPA and SCE emission factors for electricity are the same as those reported in section B.1 above.
- CPA participation rates after implementation of Measure ES2.
- Existing building stock represents the built environment through the year 2023.
- The energy efficiency eligibility rate is 25 percent for both residential and nonresidential buildings in 2030 and 2035 and 50 percent for both residential and nonresidential buildings in 2045.
- The participation rate for eligible buildings is 40 percent in 2030, 60 percent in 2035, and 90 percent in 2045. When applied to the percentage of buildings that are eligible for a retrofit, 10 percent of buildings are retrofit by 2030, 15 percent of buildings are retrofit by 2035, and 45 percent of buildings are retrofit by 2045.
- The reduction in EUI is based on 2015 average County EUI values.

Data Sources

- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymsx3rurxtg4))/frmLILogin.aspx)
- CPA Member Status Report, July 28, 2021
- Climate Registry
Link: <https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf> (the 2018 document was the latest available at the time the inventories were prepared)

Strategy 7: Conserve Water

MEASURE E6: REDUCE INDOOR AND OUTDOOR WATER CONSUMPTION

Table B-20: Measure E6 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	10,575
2035	15,122
2045	11,764

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure E6 is to reduce water use to less than 110 gallons per capita per day (GPCD) by 2030, less than 100 GPCD by 2035, and less than 75 GPCD by 2045.

Modeling Approach

Water use and the associated energy use (electricity and natural gas) to distribute and treat water supplied to unincorporated Los Angeles County were estimated for both the Adjusted BAU forecast scenario and the Measure E6 implementation scenario. Metropolitan Water District of Southern California's (MWD's) historical water use was used as a proxy for unincorporated Los Angeles County.⁵⁶ Water use in gallons per capita per day (GPCD) under the Adjusted BAU forecast was projected for each future year using unincorporated Los Angeles County's population and MWD's 2019 per capita water use (121 GPCD), which was then converted to acre-feet per year (AF/yr). Water use associated with the implementation of Measure E9 was estimated using the target GPCD (listed above) and population, which was then converted to AF/yr.

The electricity and natural gas use resulting from each of the water use scenarios (Adjusted BAU and Measure E9 implementation) was estimated for both residential and nonresidential land uses. Energy intensity factors from The Pacific Institute's *The Future of California's Water-Energy-Climate Nexus* report were used to estimate the energy use associated with the treatment, distribution, end-use, and collection of water in the region, as well as the treatment of the resulting wastewater.⁵⁷ Data from the Los Angeles County Waterworks Districts 2020 Urban Water Management Plan were used to get the following regionally specific information, which was then applied to each water use scenario: the ratio of total water demand met by locally pumped groundwater (31 percent), the ratio of total water used that is collected as wastewater (59 percent), the ratio of collected wastewater that goes through secondary treatment (100 percent), and the water used by residential versus nonresidential land uses (76 percent and 24 percent, respectively).^{58,59} Averages were used to estimate the amount of residential water that is heated versus nonresidential water that is heated.^{60,61}

To estimate the GHG reductions associated with Measure E6, GHG emissions associated with following two scenarios were quantified and the difference between the two was taken: implementation of Measures ES2, E1, E2, and ES3 and implementation of Measures ES2, E1, E2, ES3, and E6. In each scenario, water use was assigned to existing or new development using forecasted residential and nonresidential land use percentages. To account for implementation of Measure E1, the appropriate percentage of natural gas use associated with water use in existing development was converted to electricity use. For example, 25 percent of residential natural gas use (therms) associated with water use in existing development was converted to kWh and added to existing residential development's electricity use associated with water. The electricity use resulting from implementation of Measure E1 (electricity use associated with water use in existing residential and nonresidential development) was then multiplied by emission factors which accounted for Measures ES2 and ES3; i.e., the percentage of electricity supplied by solar and the participation rate in each tier of CPA electricity. The natural gas use resulting from implementation of Measure E1 was multiplied by standard emission factors

⁵⁶ Metropolitan Water District of Southern California. 2021. *2020 Urban Water Management Plan*. June 2021. Available: <https://www.mwdh2o.com/media/21641/2020-urban-water-management-plan-june-2021.pdf>. Accessed November 2021.

⁵⁷ The Pacific Institute. 2021. *The Future of California's Water-Energy-Climate Nexus*. September 2021. Available: https://pacinst.org/wp-content/uploads/2021/09/Water-Energy-Report_Sept-2021.pdf. Accessed November 2021.

⁵⁸ Los Angeles County Waterworks Districts. 2021. *2020 Urban Water Management Plans*. October 2021. Available: <https://dpw.lacounty.gov/wwd/web/Publications/WMP.aspx>. Accessed November 2021.

⁵⁹ California Department of Water Resources. 2022. Water Use Efficiency Data Portal. Available: <https://wuedata.water.ca.gov/default.asp>. Accessed November 2021.

⁶⁰ Water Research Foundation. 2016. *Residential End Uses of Water*, Version 2, Executive Report. April 2016. Available: https://www.circleofblue.org/wp-content/uploads/2016/04/WRF_REU2016.pdf. Accessed November 2021.

⁶¹ Yudelso, 2010. Available: <http://greenbuildconsult.com/pdfs/GreenWater.pdf>. Accessed November 2021.

associated with each land use type. To account for implementation of Measure E2, all natural gas use associated with water use in new development was converted to electricity and added to new development's electricity use associated with water. The combined electricity use resulting from implementation of Measure E2 was then multiplied by emission factors which accounted for Measures ES2 and ES3; i.e., the percentage of electricity supplied by solar and the participation rate in each tier of CPA electricity. Emissions associated with existing development were then summed with emissions associated with new development for each scenario.

Assumptions

- Unincorporated Los Angeles County's water use profile is equivalent to that of MWD.
- The County falls within the South Coast and South Lahontan water regions, thus energy intensity factors for each region were averaged.
- The County's water use profile can be represented by Los Angeles County Waterworks Districts data.
- No efficiency losses result from natural gas conversion to electricity (Measure E1).
- 33 percent of residential indoor water use is heated and 22 percent of nonresidential indoor water use is heated.
- CPA and SCE emission factors for electricity are the same as those reported in Section B.1 above.
- CPA participation rates after implementation of Measure ES2.

Sources

- SCAG Population Projections
Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>
- MWD 2020 Urban Water Management Plan
Link: <https://www.mwdh2o.com/media/21641/2020-urban-water-management-plan-june-2021.pdf>
- Los Angeles County Waterworks Districts 2020 Urban Water Management Plan
Link: <https://dpw.lacounty.gov/wwd/web/Publications/WMP.aspx>
- Water Use Efficiency Data (WUEdata) Portal
Link: https://wuedata.water.ca.gov/uwmp_export_2020.asp
- Water-Energy-Climate Nexus Report
Link: https://pacinst.org/wp-content/uploads/2021/09/Water-Energy-Report_Sept-2021.pdf
- Residential End Uses of Water Report
Link: https://www.circleofblue.org/wp-content/uploads/2016/04/WRF_REU2016.pdf
- SCE Emission Factors
Link: <https://www.edison.com/content/dam/eix/documents/sustainability/eix-esg-pilot-quantitative-section-sce.pdf>
- CPA Emission factors
Link: (account required for download): [https://cris4.org/\(S\(rtuopf12t5k5ymxsx3rurxtg4\)\)/frmLILogin.aspx](https://cris4.org/(S(rtuopf12t5k5ymxsx3rurxtg4))/frmLILogin.aspx)

Waste

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

MEASURE W1: INSTITUTIONALIZE SUSTAINABLE WASTE SYSTEMS AND PRACTICES

Table B-21: Measure W1 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	154,514
2035	248,362

2045	342,934
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Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure W1 is to increase the total unincorporated Los Angeles County waste diversion rate to 85 percent by 2030, 90 percent by 2035, and 95 percent by 2045.

Modeling Approach

Target waste disposal in units of tons per capita per year were estimated for each future year using the BAU annual waste generation rate per capita (3.0 tons per person per year in 2030 and 3.1 tons per person per year in 2035 and 2045), the BAU average diversion rates (75 percent for 2030, 2035, and 2045), and the target diversion rates (85 percent in 2030, 90 percent in 2035, and 95 percent in 2045). These target disposal rates were then converted to total reduction in landfilled waste in tons, compared to the BAU landfilled waste tonnages, using forecasted population. A ratio of BAU waste disposal and BAU emissions to targeted waste disposal was then used to estimate the emissions associated with waste disposal once Measure W1 has been implemented. To estimate reductions associated with new development versus existing development, a ratio of incremental population growth to total population in each of the target years was used.

Assumptions

- The BAU solid waste disposal rates are 3.0 tons per person per year in 2030 and 3.1 tons per person per year in 2035 and 2045.
- The BAU solid waste diversion rate is 75 percent in 2030, 2035, and 2045.
- Solid waste diversion rate and organics diversion rate are assumed to remain constant at 75 percent and 38 percent, respectively.
- For each ton of solid waste not placed in a landfill, 0.44 MTCO₂e is saved (based on the Adjusted BAU forecast for the waste sector; see Appendix A).

Sources

- CARB FOD Model
Link: <https://ww2.arb.ca.gov/resources/documents/landfill-methane-emissions-tool>
- CalRecycle SWIS Reports
Link: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Search>
- LADPW SWIMS Reports
Link: <https://dpw.lacounty.gov/epd/swims/OnlineServices/reports.aspx>
- CalRecycle Landfill Gas Master
Link: <https://www2.calrecycle.ca.gov/PublicNotices/Documents/1642>

- SCAG Population Projections
Link: <http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting>

Agriculture, Forestry, and Other Land Use

Strategy 9: Conserve and Connect Wildlands and Working Lands

MEASURE A1: CONSERVE FORESTS, WOODLANDS, SHRUBLANDS, GRASSLANDS, DESERT, AND OTHER CARBON-SEQUESTERING WILDLANDS AND WORKING LANDS

Table B-22: Measure A1 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	8,953
2035	17,906
2045	26,858

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

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

Performance Objectives

The goal of Measure A1 is to reduce the amount of natural land converted for urban uses 25 percent below current (2018) levels by 2030, 50 percent by 2035, and 75 percent by 2045; this is equivalent to conserving natural lands that would have otherwise been converted for urbanized uses by 53 hectares annually by 2030, 106 hectares annually by 2035, and 159 hectares annually by 2045.

Modeling Approach

The Adjusted BAU forecast assumes that 212 hectares of forest land are converted to a new land use each year, which releases carbon stored in the removed biomass. GHG emissions reductions from Measure A1 were calculated by decreasing the amount of forest land conversion in each future year and multiplying by an emission factor for land conversion. For each hectare of natural land converted to other uses, a one-time emission of 169 MTCO₂e per hectare would occur (see Appendix A for discussion).⁶² The number of hectares saved from conversion under Measure A1 for each future year was multiplied by the one-time emission rate of 169 MTCO₂e to calculate GHG emissions reductions for this measure.

Assumptions

- 212 hectares of natural land is converted annually in the Adjusted BAU forecast.
- For each hectare of natural land saved from conversion, avoided emissions would be 169 MTCO₂e.

⁶² NASS. 2021. CropScape. Available: <https://nassgeodata.gmu.edu/CropScape/>. Accessed January 2021.

References

- NASS, 2021. CropScape.
Link: <https://nassgeodata.gmu.edu/CropScape/>

Strategy 10: Sequester Carbon and Implement Sustainable Agriculture

MEASURE A3: EXPAND UNINCORPORATED LOS ANGELES COUNTY'S TREE CANOPY AND GREEN SPACES

Table B-23: Measure A3 GHG Reductions

YEAR	GHG REDUCTIONS (MTCO ₂ E)
2030	4,602
2035	7,080
2045	10,310

Abbreviations: GHG = greenhouse gas;
MTCO₂e = metric tons of carbon dioxide equivalent.

Description

Create an Urban Forest Management Plan to plant trees, increase unincorporated Los Angeles County's tree canopy cover, add green space, and convert impervious surfaces.

Performance Objectives

The goal of Measure A3 is to plant 130,000 total new trees by 2030, plant 200,000 total new trees by 2035, and plant 270,000 total new trees by 2045.

Modeling Approach

The performance goals for Measure A3 were developed using the following steps:

1. Unincorporated Los Angeles County's current urban tree canopy cover is estimated to be 10.7 percent based on the Tree People 2016 LA Tree Canopy Report. Estimates by land use type are 13 percent residential, 9 percent commercial, 4 percent industrial, and 10 percent for public/semi-public, mixed use, specific plan, and other land use types.
2. The current urban area estimate is 158,889 acres from Table 6.1 of the General Plan Land Use Element for the categories above.
3. Applying the canopy cover of 10.7 percent to the total urban area acreage yields 16,943 acres of tree canopy.
4. The goal is to increase urban tree canopy cover 10 percent by 2030, 15 percent by 2035, and 20 percent by 2045. This yields an additional 1,694 new acres of tree canopy coverage by 2030, 2,542 acres by 2035, and 3,389 acres by 2045.
5. According to a 2015 study, one acre of tree canopy coverage has approximately 80.5 trees.
6. This yields 136,394 total new trees planted by 2030, 204,591 total new trees planted by 2035, and 272,788 total new trees planted by 2045 (rounded to the nearest 10,000).

Measure A3 GHG emissions reductions were calculated using assumptions from CalEEMod.⁶³ The calculations assume a carbon sequestration rate per tree planted (from CalEEMod) and an active growing period of 20 years for each tree, after which the tree no longer stores additional carbon. The calculation also assumes a total number of trees planted for each target year, based on the performance objectives above. The number of trees planted each year was then multiplied by the growing period and sequestration rate to estimate the overall GHG reductions from Measure A3 for each target year.

Assumptions

- Tree growing period of 20 years.
- The carbon sequestration rate remains constant for each year for each tree planted.
- The carbon sequestration rate is the average rate for all species classes included in CalEEMod.

References

- California Air Pollution Control Officers Association, CalEEMod v2020.4.0 User's Guide, Appendix A Calculation Details
Link: <http://www.aqmd.gov/docs/default-source/caleemod/user-guide-2021/appendix-a2020-4-0.pdf?sfvrsn=6>
- Tree People, Los Angeles County Tree Canopy Assessment
Link: <https://www.treepeople.org/wp-content/uploads/2020/08/Tree-Canopy-LA-2016-Final-Report.pdf>
- Lund, H. G., 2015, Canopy Cover, Trees per Acre, Crown Width, and Tree Spacing
Link: https://www.researchgate.net/publication/288335361_Canopy_Cover_Trees_per_Acre_Crown_Width_and_Tree_Spacing

⁶³ California Air Pollution Control Officers Association. 2021. *CalEEMod v 2020.4.0 User's Guide*, Appendix A Calculation Details. May 2021. Available: <http://www.aqmd.gov/docs/default-source/caleemod/user-guide-2021/appendix-a2020-4-0.pdf?sfvrsn=6>. Accessed November 2021.

B.3 Attachment A: Fehr & Peers Modeling Analysis

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Memorandum

Date: February 22, 2023

To: Brian Schuster, Breanna Sewell, Renee Longman, and Jeff Caton, ESA

From: Ali Kothawala, Miguel Nunez, and Sarah Brandenburg, Fehr & Peers

Subject: LA County 2045 Climate Action Plan Update - VMT Technical Memorandum

LA21-3290

Introduction

Purpose of transportation analysis in Climate Action Plan Quantification

The Draft 2045 LA County Climate Action Plan (CAP) actions and targets are informed by a robust data and analysis process. Data was collected for each of the topic areas and analyzed to help inform and develop actions and targets, and create meaningful, measurable, and trackable indicators. Land use and transportation actions that help reduce VMT include bike, ped, and transit improvements, transportation demand management programs, and land use design and density.

This current effort is applying and quantifying estimated benefits of CAP strategies for VMT reductions using a state-of-the-practice approach from the California Air Pollution Control Officers Association (CAPCOA) GHG Handbook

The purpose of this technical memorandum is to present the methodology and assumptions applied for quantifying estimated VMT reductions of selected transportation demand management (TDM) strategies contained in the CAP. The project team developed a list of various TDM strategies as part of the CAP, the strategies were narrowed based on applicability and available data, and the corresponding VMT reductions were estimated using the CAPCOA GHG Reductions Handbook¹ (December 2021).

¹ Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, California Air Pollution Control Officers Association, December 2021. Last accessed January 3, 2022, at <http://www.airquality.org/air-quality-health/climate-change/ghg-handbook-caleemod>



VMT from Prior CAP Effort

F&P developed an inventory of the VMT and GHG emitted in Los Angeles County in support of the previous Los Angeles County Sustainability Plan (OurCounty). The VMT and emissions analysis for the OurCounty utilized data inputs and outputs from the SCAG regional travel demand model. Emissions were calculated through use of the EMFAC model. The current update to the CAP builds off prior efforts and Buro Happold used the OurCounty VMT projections as the basis for providing forecasts for the year 2045.

VMT Reductions Approach

CAPCOA Overview

TDM strategies have been determined to be among the most effective for reducing VMT. TDM strategies are reductions available from certain types of project site modifications, programming, and operational changes. The effectiveness of identified TDM strategies builds on research documented in the 2010 California Air Pollution Control Officers Association (CAPCOA) publication, *Quantifying Greenhouse Gas Mitigation Measures* (CAPCOA, 2010). The 2010 CAPCOA GHG Handbook was recently updated and the final version was published in December 2021. The CAPCOA Handbook contains detailed equations to apply these TDM reductions given the land use type and built environment context. The Handbook provides a percentage range (minimum-maximum) on the expected VMT reduction for each individual TDM strategy. In addition, some TDM strategies have complementary benefits reducing VMT, and need to be considered in combination, and not individually.

Data Sources (land use, transit, and bike facilities)

In order to apply the appropriate VMT percent reduction for each TDM strategy listed below, certain inputs are required that describe the land use type, built environment context, and characteristics of the TDM strategy. The inputs were provided to Fehr &Peers by LA County staff, and where information was not available, assumptions were made based on the default values provided in the CAPCOA Handbook.

- **Land Use:**
 - Increase residential/job density
 - Provide transit-oriented development (TOD) near high-quality transit areas (HQTA)



- *Data sources:* LA County provided F&P a GIS shapefile layer showing the 2029 Housing Element Rezone Areas. F&P used a major transit stop² GIS layer that was developed as part of the LA County SB 743 VMT Tool released in late 2020.
- **Transit service:**
 - Increase transit service hours
 - Provide treatments to enhance existing transit routes
 - Improve county shuttle system
 - *Data sources :* LA Metro NextGen Plan³ and LA Metro LRTP⁴
- **Bike Facilities:**
 - Increase the number of bikeway miles
 - *Data sources:* Los Angeles County Bike Master Plan 2012.⁵

² "Major transit stop" is defined as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (CA Public Resource Code, § 21064.3).

³ LA Metro NextGen Bus Plan, Los Angeles Metropolitan Transportation Authority, October 2020. Last accessed on January 03, 2022, at <https://www.metro.net/about/plans/nextgen-bus-plan/>

⁴ 2020 Long Range Transportation Plan, Los Angeles Metropolitan Transportation Authority, Mar 2020. Last accessed on January 03, 2022, at <https://www.metro.net/about/plans/long-range-transportation-plan/>

⁵ Bicycle Master Plan, County of Los Angeles Public Works, March 2012. Last accessed January 3, 2022, at <https://pw.lacounty.gov/tpp/bike/docs/bmp/FINAL%20Bicycle%20Master%20Plan.pdf>



Applying VMT reductions

Data Sources and Quantifying VMT Reductions with CAPCOA

To quantify VMT reductions, appropriate equations were used based on factsheets in the CAPCOA handbook. Using the data obtained from sources identified in the previous section as inputs, percent reductions in VMT were estimated. However, not all reductions can be applied to all or total VMT. VMT resulting from light-duty vehicles is often categorized by trip purpose. Different VMT measures based on their nature and scope of application may apply either to one or more categories of the total combined light-duty vehicle VMT. For example, commuter subsidies are most likely to reduce home-based work VMT for employees and less likely to reduce VMT for retail patrons. In a similar vein, VMT reduction benefits accrue based on the geographic extent and context in which the strategy is applied. For instance, providing bicycle, pedestrian, and transit infrastructure will likely have more benefit in an urban than rural area. Not all measures will have a countywide effect. After identifying data sources, VMT reduction strategies, and the scope of each reduction, the VMT reduction estimates were finalized.

To estimate VMT reductions, implementing actions in the Draft GHG Reduction Measures Recommendations Memo (June 16, 2021) were first screened to identify actions whose reduction can be quantified. While most actions can be quantified, the level of detail needed to provide a detailed VMT estimate was not available; therefore, five quantifiable actions across the three categories were used for the CAP's VMT reduction estimate. This is not to say that the screened-out actions hold little or no GHG reduction potential. Like Supporting or Non-Quantified Reduction Measures enlisted in the Handbook, non-quantified VMT reduction actions although not quantitatively evaluated "may achieve emissions reductions and co-benefits on their own or may enhance the ability of quantified measures to attain expanded reduction and co-benefits." Table 1 summarizes the final list of quantifiable measures and implementing actions under each strategy and corresponding information such as the applicable CAPCOA strategy maximum VMT reduction that can be claimed under the strategy, data inputs required to quantify the benefit, assumptions made where needed, the equation used to estimate VMT reduction, and scope of application for geography and trip purpose.

Table 1. Quantifiable GHG Reduction Measures and corresponding VMT Reduction Category and Scope

Description	Tracking Metrics	Applicable 2021 CAPCOA Strategy & VMT Reduction Range	CAPCOA User Inputs	F&P Input Assumptions	% GHG Reduction Quantification	VMT Category & Geographic Scope to which Reduction is Applied to
Strategy 2: Increase densities and diversity of destinations with an emphasis near transit						
Measure T1: Increase Density Near High-Quality Transit Areas						
Increasing residential density, particularly near transit and affordable housing, is shown to reduce VMT.	Number and percent of increase in DUs in HQTAs, Specific Plans, or Area Plans	T-1 – Increase Residential Density. Up to 30% GHG emissions from VMT, depending on project DU per acre	Project DU per acre & typical DU per acre	Densities range from 20 DU per acre to 50 to 70 DU per acre. 9.1 DU/acre for typical density	20 du/acre : $(20-9.1) / 9.1 \times -0.22 = \underline{-26.4\% \text{ reduction}}$	Home-Based VMT in TOD Areas
Implementing Actions						
T1.2 – Incentivize and prioritize development within	<ul style="list-style-type: none"> • Increase in DUs within HQTA • DU per acre Change in number of jobs and housing in non- HQTAs	T-3 – Provide Transit-Oriented Development	(B) Transit & (D) auto mode share in surrounding City, and (C) Ratio of transit mode share for TOD	27% measure maximum (B x C) & 85% auto mode share based on 2012 CHTS (D)	$27\% / -85\% = \underline{-31.8\% \text{ reduction (use maximum 31\%)}}$	Total VMT in TOD Areas



Description	Tracking Metrics	Applicable 2021 CAPCOA Strategy & VMT Reduction Range	CAPCOA User Inputs	F&P Input Assumptions	% GHG Reduction Quantification	VMT Category & Geographic Scope to which Reduction is Applied to
(HQTAs) ⁶ , while ensuring inclusion of vital public amenities such as parks and active transportation infrastructure.		(TOD) ⁷ . Up to 31% of GHG emissions from project VMT.	area with measure compared to existing transit mode share in surrounding city			
Measure T2: Develop Land Use Plans Addressing Jobs/Housing Balance & Increase Mixed Use						
Increasing density and diversity of destinations can help reduce single occupancy	Change in number of jobs and housing in non-HQTAs	T-2 – Increase Job Density. Up to 30% GHG emissions from VMT, depending on project jobs per acre	Job density of typical development = 145 jobs per acre, & Elasticity of VMT with respect	Project job density = 300 jobs per acre	$(300-145)/145 \times -0.07 =$ <u>-7.5% reduction</u>	This strategy overlaps with the TOD strategy above where we assume 31% Total VMT

⁶ High Quality Transit Areas: Areas within one half mile of a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

⁷ To be considered TOD, a development must be within a 10-minute walk (0.5 mile) of a high frequency transit station (rail, or bus with headways less than 15 minutes)



Description	Tracking Metrics	Applicable 2021 CAPCOA Strategy & VMT Reduction Range	CAPCOA User Inputs	F&P Input Assumptions	% GHG Reduction Quantification	VMT Category & Geographic Scope to which Reduction is Applied to
trips, the number of trips, and trip lengths			to job density = -0.07			Reduction at TOD sites. No reduction here.
Strategy 3: Reduce single-occupancy vehicle trips						
Measure T3: Expand Bicycle & Pedestrian Network to Serve Residential, Employment, & Recreational Trips						
Travel options that serve a variety of land uses and trip purposes can help shift some trips away from single-occupancy vehicles.	T-17 – Provide Pedestrian Network Improvement. Up to 6.4% GHG emissions from vehicle travel, depending on length of existing and planned facilities T-19 – Expand Bikeway Network.	<ul style="list-style-type: none"> • Miles of bikeway type • Miles of transit routes • Headways 				
Implementing Actions						
T3.2 – Create a more connected and	<ul style="list-style-type: none"> • Miles of bikeway type 	T-19 – Expand Bikeway Network. Up to 0.5% GHG emissions from	Miles of existing & planned bikeways	LA County Bike Plan proposes significant	<u>-0.5%</u> Maximum Reduction	Total VMT Countywide



Description	Tracking Metrics	Applicable 2021 CAPCOA Strategy & VMT Reduction Range	CAPCOA User Inputs	F&P Input Assumptions	% GHG Reduction Quantification	VMT Category & Geographic Scope to which Reduction is Applied to
safer bikeway network by expanding bikeway facilities and deploying protected and separated lanes.	<ul style="list-style-type: none"> Additional employees or residents served Number of cities collaborated with to inform key areas for bicycle infrastructure expansion Number of funding sources identified or % of funding secured	vehicle travel, depending on length of existing and planned facilities		increases in bikeway miles. This analysis applies a 300% increase in bikeway miles by 2035. The maximum possible reduction of 0.5% is estimated based on the extent of network improvements outlined in the 2012 Bike Plan		(unincorporated areas)
Measure T4: Encourage Transit, Active Transportation, & Alternative Modes of Transportation						
Implementing Actions						
T4.1 – Expand and improve frequency of	<ul style="list-style-type: none"> Size of area served 	T-24 – Extend Transit Network Coverage or Hours. Up to 4.6% of	Total transit service hours	Assume transit mode share of 4.6% per 2012	$-1 \times (1.12M-560K)/560K \times 4.6\% \times 0.7 \times 57.8\% \times 1 =$ <u>-1.9% Reduction</u>	Total VMT Countywide



Description	Tracking Metrics	Applicable 2021 CAPCOA Strategy & VMT Reduction Range	CAPCOA User Inputs	F&P Input Assumptions	% GHG Reduction Quantification	VMT Category & Geographic Scope to which Reduction is Applied to
existing network of County shuttles and explore new mobility services, such as micro transit ⁸ , in unincorporated County areas.	<ul style="list-style-type: none"> Number of employees and residents served Service frequency and headways 	GHG emissions from vehicle travel, depending on increase in transit service hours or miles and the transit mode share in the community.	before & after expansion	CHTS; Assume 560,000 existing transit service hours in unincorporated county & 1.12 million after expansion based on Metro NextGen		(unincorporated areas)
T4.2 – Collaborate with Metro and other transit providers to install bus-only lanes and	<ul style="list-style-type: none"> Increase in headways or frequencies Increase in headways 	T-26 – Implement Transit-Supportive Roadway Improvements. Up to 0.6% GHG emissions from vehicle travel, depending on the	Percent of transit routes that receive treatments	Assume transit mode share of 4.6% per 2012 CHTS, 85% for auto; Assume major transit	-1 x (100% x -10 x -0.4 x 4.6% x 57.8%) / 85% = <u>-12.5% Reduction</u> (use maximum <u>-0.6%</u>)	Total VMT in TOD Areas/HQTA Stops

⁸ Micro transit is public or private multi-passenger transportation services that serve passengers using dynamically generated routes; they provide transit-like service on a smaller, more flexible scale.



Description	Tracking Metrics	Applicable 2021 CAPCOA Strategy & VMT Reduction Range	CAPCOA User Inputs	F&P Input Assumptions	% GHG Reduction Quantification	VMT Category & Geographic Scope to which Reduction is Applied to
signal prioritization along major thoroughfares, and work with transit agencies and neighboring jurisdictions to plan and install full bus rapid transit infrastructure along priority corridors, as appropriate.	<ul style="list-style-type: none"> • Increase in residents/employees served • Travel time reliability • Creation of new HQTAs 	percent of transit routes that receive improvements.		thoroughfares in unincorporated county will receive treatments such as bus only lanes and/or signal prioritization		

CAPCOA Analysis and Findings

VMT is calculated at the transportation analysis zone (TAZ) level. TAZs are comparable in size and shape to census tracts or block groups depending on the travel demand model used and level of modeling detail. Once the percent VMT reductions were determined, based on the geographic scope and VMT category of each implementation action, the appropriate VMT was aggregated across the county or specific geographic sub areas, such as the TAZs within which transit enhancements would take place. Actions T3.2 and T4.1 were applied countywide. For the remaining actions, only the VMT generated in TAZs whose geographic area overlapped with the location of the infrastructure or land use strategy were included. Percent reductions were then applied to appropriate VMT sub-totals to obtain the VMT reduction estimates. The sum of these reductions was then subtracted from total light-duty vehicle VMT to estimate adjusted daily VMT. This adjusted daily VMT was then projected to obtain VMT reductions and adjusted totals in each analysis year (2030, 2035, and 2045). Table 2 shows reductions for each quantifiable implementation action for the analysis years.

Based on the methodology outlined in the CAPCOA Handbook, when determining the overall VMT reduction, the VMT reduction is separately calculated for each of the individual strategies should be dampened, or diminished, according to a multiplicative formula to account for the fact that some of the strategies may be redundant or applicable to the same populations. The multiplicative equation to accomplish this adjustment is as follows:

$$\text{Overall \% VMT Reduction} = 1 - (1-A) * (1-B) * (1-C) * (1-D) \dots$$

where A, B, C, D ... = individual mitigation strategy reduction percentages

For example, if two strategies were proposed with corresponding VMT reductions of 20% and 10%, the equation would be $[1 - (1-20\%) * (1-10\%)]$ or $[1 - (80\% * 90\%)]$, which equates to a 28% reduction rather than the 30% reduction that would otherwise be seen with a direct sum. Therefore, the overall VMT reduction was calculated as a dampened, or diminished, total according to the equation above, which produces a conservative overall estimate.

$$A = 1.38\%; \quad B = 1.97\%; \quad C = 0.15\%; \quad D = 0.57\%; \quad E = 0.01\%$$

$$\text{Overall \% VMT Reduction} = 1 - (1-0.0138) * (1-0.0197) * (1-0.0015) * (1-0.0057) * (1-0.0001) = 4.03\%$$

Based on the application of VMT reductions and dampening factor, the reduction of 4.03% would result in a total adjusted total daily VMT of 18,798,031 VMT in 2035, for example.

Table 2. VMT Reductions per Quantifiable Implementation Action for Analysis Years 2030, 2035, and 2045

Reduction Category	Reduction Percent	VMT Applied to	Geography Applied to	Daily VMT Reduction			Reduction as a share of Total County VMT
				2030	2035	2045	
M1T1 Increase Residential Density in HQTAs	26.4	Home-based VMT	TAZs intersecting TODs	267,982	269,689	273,103	1.38%
T1.2 Incentivizing and Promoting HQTAs	31	Total VMT	TAZs intersecting TODs	383,838	386,283	391,172	1.97%
T3.2 Pedestrian and Bikeway Network Improvements	0.5	Total VMT	Unincorporated County	0	29,133	29,502	0.15%
T4.1 County Shuttles	1.9	Total VMT	Unincorporated County	110,005	110,706	112,107	0.57%
T4.2 Bus-only and signal prioritization	0.6	Total VMT	TAZs intersecting TODs	2,303	2,318	2,347	0.01%
Subtotal for VMT Reductions				764,128	798,128	808,231	
Total Daily VMT (Pre-VMT reductions)				19,442,787	19,596,159	19,902,905	4%
Total Daily VMT (Post-VMT reductions)				18,678,659	18,798,031	19,094,674	

5. Conclusion

The estimated benefits of CAP strategies for VMT reductions were quantified using a state-of-the-practice approach from the California Air Pollution Control Officers Association (CAPCOA) GHG Handbook. GHG reduction measures and Implementing actions were first screened to identify those that can be quantified. Using travel demand forecasting results from the SCAG regional travel demand model, County VMT data were used, based on trip purpose and geography, to estimate benefits from CAP actions.

While several strategies have significant reduction potential of up to 30%, like those that involve increasing residential density, the measures are applied to a portion of the unincorporated county and therefore accrue a net reduction of less than 2% countywide. When accounting for a combined effect, the effectiveness of each measure could be dampened by the existence of a similar overlapping measure. By estimating VMT that more closely reflects the travel to be likely affected by a certain measure, possibilities of overlaps have been minimized. Even then, a dampening factor was applied above to show the total reduction estimate that accounts for dampening arrives at a similar VMT reduction estimate. This analysis will support the analysis and quantification of benefits from the CAP for Los Angeles County and its residents.

LA COUNTY CAP VMT REDUCTION ESTIMATE SUMMARY

revised 2/22/23

Reduction Category	Reduction%	VMT Applied to	Geography Applied to	2030		2035		2045	
				Daily VMT Reduction	Adjusted Total Daily VMT	Daily VMT Reduction	Adjusted Total Daily VMT	Daily VMT Reduction	Adjusted Total Daily VMT
Residential Density	26.4	HBVMT	TAZs intersecting TODs	267,982	18,678,659	269,689	18,798,031	273,103	19,094,674
HQTA	31	LMV OD VMT	TAZs intersecting TODs	383,838		386,283		391,172	
Pedestrian and Bikeway Network Improvements	0.5	LMV OD VMT	Unincorporated County	-		29,133		29,502	
County Shuttles	1.9	LMV OD VMT	Unincorporated County	110,005		110,706		112,107	
Bus-only and signal prioritization	0.6	LMV OD VMT	TAZs intersecting TODs	2,303		2,318		2,347	

Unincorporated LA County Pre-VMT Reductions

PA (OD) VMT	LMV	HDT	All
2016	18,343,532	669,811	19,013,343
2030	18,676,608	766,179	19,442,787
2035	18,795,563	800,596	19,596,159
2045	19,033,475	869,430	19,902,905

Unincorporated LA County WITH VMT Reductions

PA (OD) VMT	LMV	HDT	All
2030	17,912,480	766,179	18,678,659
2035	17,997,435	800,596	18,798,031
2045	18,225,244	869,430	19,094,674

% Reduction

2030	4%
2035	4%
2045	4%

APPENDIX C

Prior and Current County of Los Angeles Actions on Climate Change

Purpose

This appendix describes past and current County of Los Angeles (County) actions to address climate change and reduce greenhouse gas (GHG) emissions. The appendix is organized in two sections as discussed below.

Los Angeles County Community Climate Action Plan 2020

This section describes the 2020 Los Angeles County Community Climate Action Plan (2020 CCAP), the County's first community climate action plan, adopted in 2015. It presents the 26 local actions for GHG emissions reduction and the progress that has been made by the County on each action.

OurCounty Sustainability Plan

This section describes the OurCounty Sustainability plan, adopted in 2019. It lists the key OurCounty actions that pertain to GHG emissions reductions and have linkages to the 2045 CAP strategies, measures, and actions.

C.1 Los Angeles County Community Climate Action Plan 2020

The County adopted the 2020 CCAP as a component of the Air Quality Element of the General Plan in 2015. The 2020 CCAP aligned with General Plan goals, policies, and programs and several other existing programs in Los Angeles County. It identified emissions related to community activities, established a 2020 GHG emissions reduction target consistent with Assembly Bill (AB) 32, and established 26 local actions for GHG emissions reduction. The 2020 CCAP was the first attempt to set Countywide GHG emissions reduction goals, providing a road map for implementing the County GHG emissions reduction measures. The 2020 CCAP addressed emissions from land use, transportation, building energy, water consumption, and waste generation.

The actions outlined in the 2020 CCAP, along with additional climate-related efforts, reflect the County's existing commitment to reducing GHG emissions. The 2020 CCAP actions were implemented through ordinance amendments to the County Code and implementation of various energy, land use, transportation, water conservation, and waste reduction programs. The *2045 Los Angeles County Climate Action Plan* (2045 CAP) builds on previous work and defines new reduction targets beyond the year 2020 for 2030, 2035, and 2045, and identifies a long-term aspirational target for carbon neutrality by 2045. The County's accomplishments and ongoing initiatives (as of 2022) are listed below.

LUT-1: Bicycle Programs and Supporting Facilities (Ongoing)

Since approval of the Bicycle Master Plan in 2012, the County has applied for and received grants to implement the plan's proposed bikeway network. In 2018, the County was awarded a total of \$10,164,054 in grant funding for bikeways, pedestrian improvements (sidewalks, curb ramps, high-visibility crosswalks, and wayfinding signage), and transit improvements (bus stop amenities) from the Affordable Housing and Sustainable Communities Program for projects in the unincorporated communities of Willowbrook, East Los Angeles, and Florence-Firestone. In 2019 and 2020, the County was awarded a total of \$9,065,260 in grant funding from the Measure M Multiyear Sub-Regional Program for projects in the unincorporated communities of Lake Los Angeles, Val Verde, Bouquet Canyon, Canyon Country, White Fence Farms, and Topanga Canyon. Throughout the unincorporated areas of Los Angeles County (Unincorporated Los Angeles County), 64 miles of bikeways were created between 2012 and 2021, with 3.65 miles in progress. An additional 36 miles of bikeway are planned to be completed by 2025, with 18 miles scheduled to be completed thereafter. In total, 122 miles of bikeway have been constructed or planned as part of unincorporated Los Angeles County's bikeway network. The Bicycle Master Plan is being updated to revise the list of bikeways—removing infeasible locations and identifying new locations, developing design guidelines for Class IV bikeways, developing policies and guidelines for bikeway infrastructure that could be shared with micro-mobility devices, and improving first-/last-mile bikeway connections to transit stops. The update is anticipated to be completed in 2024.

LUT-2: Pedestrian Network (Ongoing)

During calendar years 2019, 2020, and 2021, the County Department of Public Works' (PW's) road construction program completed 85,100, 101,700, and 10,754 linear feet, respectively, of

new and reconstructed sidewalks. Additionally, 60,000 square feet of sidewalk was repaired in 2021. In 2019, the County also adopted Step by Step Los Angeles County, a sub-element to the General Plan Mobility Element that included Countywide pedestrian policies, programs, and procedures, as well as community pedestrian plans for the four unincorporated communities of Lake Los Angeles, Walnut Park, Westmont/West Athens, and West Whittier–Los Nietos.

LUT-3: Transit Expansion (Ongoing)

Through the 2020 CCAP, the County has committed to working with the Los Angeles County Metropolitan Transportation Authority (Metro) on a transit program that prioritizes public transit by creating bus priority lanes, improving transit facilities, reducing transit-passenger time, and providing bicycle parking near transit stations. Future efforts will include exploring programs to offer discounted transit passes, constructing infrastructure to increase bicyclist and pedestrian access to transit stations, and implementing “first mile–last mile” strategies.

The County has been supporting Metro as a stakeholder during its development of the Pilot Congestion Pricing Study, the goal of which is to improve traffic congestion along certain roadways. A major component of this effort is providing additional opportunities for and upgrading the public transit system as an alternative to personal vehicular travel.

LUT-6: Land Use Design and Density (Ongoing)

As of 2021, the County has adopted Transit Oriented District (TOD) plans for three unincorporated area communities: Willowbrook, West Carson, and West Athens–Westmont. The County is awaiting final approval for a fourth TOD in Florence-Firestone. In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program. The Department of Regional Planning (DRP) is currently working on a study to inform the update to parking standards for multi-family residential development, with the goals of reducing barriers to investments in multi-family housing production, reducing the overall cost of housing, and helping to lower vehicle miles traveled. After the conclusion of the study, recommendations will be finalized and an ordinance will be prepared to amend the zoning code. Public hearings on the ordinance are anticipated in 2023.

In March 2016, the Board of Supervisors instructed DRP to amend Title 22, the Planning and Zoning Code, to ensure that oil and gas facilities may no longer operate by right in unincorporated Los Angeles County, and that the regulations reflect best practices and current mitigation methods and technologies, minimize environmental impacts, and protect sensitive uses and populations. In September 2021, the Board of Supervisors voted to phase out oil and gas drilling and ban all new drill sites in unincorporated Los Angeles County areas. The phase-out would close more than 1,600 active and idle oil and gas wells in unincorporated Los Angeles County. On January 24, 2023, the Board of Supervisors adopted the Oil Well Ordinance, which became effective after 30 days. The County is conducting an amortization study to determine the phase-out timeline for all existing oil wells and production facilities.

LUT-7: Transportation Signal Synchronization Program (Ongoing)

The Board of Supervisors instituted the Countywide Traffic Signal Synchronization Program (TSSP) in 1988. This ongoing program involves upgrading traffic signal infrastructure and timing to allow for signal synchronization, implementation of pedestrian and bicycle improvements, and improved transit operations through more consistent travel times. TSSP projects completed between 2011 and 2020 generated estimated annual savings of 6.45 million gallons of gasoline and 338,000 gallons of diesel fuel. In addition, these projects are preventing the release of more than 985 tons of pollutants into the atmosphere as a result of reduced travel times and less stopping at red lights. An additional 17 TSSP projects are about to begin construction.

LUT-8: Electric Vehicle Infrastructure

Under Executive Orders B-48-18 and N-79-20, the State of California has set ambitious targets for electric vehicle (EV) infrastructure and deployment. Statewide goals include achieving registration of five million ZEVs in the state by 2030 and 250,000 EV supply equipment (EVSE) by 2025 to support the growth of EVs. In support of these targets, California is funneling hundreds of millions of dollars toward expanding EV charging stations and other zero-emission vehicle infrastructure.

The County has deployed approximately 350 EV charging ports across its facilities to support the electrification of the County fleet and to increase EVSE access to employees and the public. County Internal Services Department (ISD) received a grant from the California Energy Commission to support a regional EV infrastructure planning effort as a follow-up to a report on EV chargeback for County facilities and an EV needs assessment.

The County's EV Infrastructure Ordinance was adopted on September 6, 2016. This ordinance amended the zoning and building codes to provide an expedited and streamlined permitting process, and to develop an application and procedural framework for EV charging infrastructure, as mandated under Assembly Bill (AB) 1236 (2015). In addition, as part of the 2020 CCAP Implementation Ordinance, DRP amended Title 22 to ensure compatibility with EV infrastructure. The 2020 CCAP Implementation Ordinance was adopted on June 6, 2018.

In 2021, the County installed 315 new PowerFlex-networked charging stations with advanced managed charging capability; launched a collaboration with the California Conservation Corps and Cerritos College to train members on EV charging infrastructure through a \$300,000 grant for the Los Angeles Department of Water and Power; submitted 55 applications with Southern California Edison's Charge Ready II program for multiple departments; launched EVConnect, a mapping tool to identify EV charging opportunities; and launched a EV charging user dashboard via PowerBI. Also in 2021, the Board of Supervisors adopted a revised fleet policy that requires the purchase of zero emission vehicles when replacing all County vehicles, to the extent that such vehicles are available and meet operational needs.

LUT-9: Idling Reduction Goal

The Idling Reduction Ordinance amended the zoning code to require signs in on-site loading areas to encourage the reduction of vehicle idling. This ordinance was adopted on June 6, 2018.

LUT-11: Sustainable Pavements Program (Ongoing)

In 2008, PW began to implement a three-pronged sustainable pavement treatment approach to maintain roads by incorporating principles that (1) take care of roads that are in good condition; (2) use recycled materials in the selection of treatments; and (3) reuse existing materials in place to rehabilitate or reconstruct roads. The environmental footprint and cost of repairing roads using this new approach is much lower than traditional hot mix approaches. Through this program, PW has achieved an 80 percent reduction in energy usage (136 million kilowatt-hours [kWh]) and a 84 percent reduction in GHG emissions (39,100 metric tons carbon dioxide equivalent) and has saved approximately \$69.4 million.

In addition, as part of the CCAP Implementation Ordinance, adopted on June 6, 2018, DRP amended the zoning code to allow the use of "cool pavement." In November 2019, PW completed the construction of the cool-pavement pilot project and partnered with a local research educational institution that will collect data on the performance of the cool-pavement materials. PW will continue to monitor the performance of these materials and the temperature impacts on the surrounding community.

BE-1: Green Building Development

On November 26, 2019, the Board of Supervisors formally adopted the 2020 County Green Building Standards (CALGreen) Code for the new code cycle, which came into effect on January 1, 2020. This incorporates the changes from the 2019 CALGreen building code, as well as local County amendments.

PW has also adopted a Cool Roof Ordinance to amend Title 31 to mandate the installation of Tier 2–level cool roofing materials for all projects in which it has been proven to be cost effective. The ordinance was approved by the Board of Supervisors on October 16, 2018; was approved through the California Energy Commission's review process on March 12, 2019; and went into effect on May 7, 2019. In addition, as part of the 2020 CCAP Implementation Ordinance, DRP amended the zoning code to allow the use of "cool roof materials." In February 2022, the Board of Supervisors passed a motion to study the feasibility of establishing Zero Net Energy standards for major development projects and other large-scale development. In March 2022, the Board of Supervisors passed a motion to ensure the equitable decarbonization of buildings by conducting a stakeholder engagement process, studying energy resource and infrastructure needs, and seeking funding. The motion also directs PW, the Chief Sustainability Office (CSO), DRP, and other County departments to provide recommendations for an ordinance or building code changes that would phase out the use of natural gas equipment and appliances in all new residential and commercial construction and substantial renovations, where feasible, starting in 2023.

ISD is also responsible for decommissioning the Pitchess Cogeneration Station in Saugus and the Olive View Medical Center Cogeneration Station in Sylmar, both of which are significant stationary sources of emissions (via natural gas combustion).

BE-2: Energy Efficiency Programs (Ongoing)

ISD manages a portfolio of energy efficiency programs that support communities, local governments, commercial businesses, and residential and multi-family property owners. Through

annual funding provided by the California Public Utilities Commission (CPUC), ISD also administers the Southern California Regional Energy Network (SoCalREN), which supports energy efficiency programs. ISD has secured approximately \$120 million in aggregate funding from the CPUC on an annual basis since 2012, and in May 2018 was approved for \$173.5 million in additional funding over the next eight years, based on the progress of the program. By the end of 2017, the program served 1,857 single-family homes and 7,330 multi-family units and supported whole-building retrofits at public agencies in the region, resulting in more than 42.5 million kWh of electricity savings, and 80,417 therms of natural gas savings.

In 2021, SoCalREN was able to achieve more than 16 million kWh of electricity savings and more than 280,000 therms of natural gas savings. Based on the success of the County's management of SoCalREN, the CPUC approved a 14 percent funding increase over the next two years to a total two-year budget of \$49 million. ISD further successfully worked with the California Department of Food and Agriculture under a Healthy Stores and Refrigeration grant to deploy energy-efficient refrigerators at more than 80 small markets to increase the availability of fresh produce and vegetables in disadvantaged communities, and is well positioned for additional grant funding from this program when a new funding is released.

BE-3: Solar Installations

DRP amended the zoning code to support and facilitate responsible development of small-scale systems and utility-scale facilities in a manner that helps California meet its goals for renewable energy generation and GHG emissions reduction, while minimizing environmental and community impacts. The Renewable Energy Ordinance was adopted by the Board of Supervisors on December 13, 2016, and went into effect January 12, 2017. ISD has installed more than 4.5 megawatts (MW) of solar photovoltaic panels at County facilities and has plans to install an additional 20 MW over the next 5–10 years.

BE-4: Alternative Renewable Energy Programs (Ongoing)

In 2017, the Board of Supervisors approved the creation of a joint powers authority to implement a community choice energy program for Los Angeles County. That program, known as the Clean Power Alliance (CPA), began operating in 2018 and now serves 32 jurisdictions across Los Angeles and Ventura counties, representing 3 million residents.

The CPA offers three tiers of electric service: Lean Energy at 36 percent renewable, Clean Energy at 50 percent renewable, and 100 percent Renewable. Residents and enrolled businesses in unincorporated Los Angeles County are receiving 50 percent renewable energy, plus an additional 20 percent of GHG-free power from hydroelectric sources.

Since October 2022, customers in unincorporated Los Angeles County are receiving 100% renewable energy – wind, solar, geothermal – from CPA, compared to the 50% clean energy previously received. And most of the renewable energy is produced in California.

BE-6: Encourage Energy Efficiency Retrofits of Wastewater Equipment

The County will continue to implement energy efficiency for new or rehabilitated sewer facilities where operationally feasible.

BE-7: Landfill Biogas (Ongoing)

Landfills in the unincorporated areas reported a total installed (rated) capacity of 96 MW for 2019 and 2020. These landfill gas-to-energy installations include Ameresco Chiquita Energy, Puente Hills Energy Recovery, Calabasas Gas-to-Energy, and Sunshine Gas Producers Renewable Energy Project.

WAW-1: Per Capita Water Use Reduction Goal (Ongoing)

The County continues to hold free Smart Gardening Program public workshops on topics such as composting, water-wise gardening, and organic gardening. In 2018, PW held 95 workshops and participated in 25 community events. More than 2,000 residents attended the workshops, and 600 backyard compost bins and 490 worm compost bins were sold to residents. In 2019, the County conducted 117 Countywide Smart Gardening workshops attended by 2,951 residents. The workshops taught backyard/worm composting, and 730 backyard compost bins and 659 worm bins were sold to residents at a discount. In 2020, the County conducted 14 Smart Gardening workshops with 399 attendees. The County suspended the in-person workshops in March due to the COVID-19 pandemic and switched to webinars. The County conducted 67 Smart Gardening webinars with 2,460 attendees. Composting was the primary theme of the workshops and webinars, where 361 backyard compost bins and 293 worm bins were sold to residents at a discount. In 2021, the County held 134 smart gardening webinars with more than 6,000 attendees and sold 374 backyard compost bins and 479 worm compost bins to residents.

The County allocated \$300,000 for the Waterworks Districts' Water Customer Rebate program in Fiscal Year (FY) 2016–2017. In FY 2018–2019, the Cash for Grass Rebate entailed 40 application pre-approvals, totaling \$49,000 paid. The high-efficiency appliance/device rebates provided \$3,900 in rebates. The County allocated \$300,000 for in FY 2020–2021. The Cash for Grass Rebate program through FY 2020–2021 had 26 application pre-approvals totaling \$58,000.

WAW-2: Recycled Water Use, Water Supply Improvement Programs, and Stormwater Runoff (Ongoing)

The passage of Measure W in November 2018 created the County's Safe Clean Water Program. The Safe Clean Water Program's goals include improving and protecting water quality; capturing rain and stormwater to increase safe drinking water supplies and preparing for future droughts; and protecting public health and marine life by reducing pollution, trash, toxins, and plastics entering Los Angeles County waterways, bays, and beaches.

The program generates about \$285 million annually through a special parcel tax of 2.5 cents per square foot for impermeable surface area (about \$83 per year for the average County household). This includes paved and developed areas where rainfall cannot be absorbed into the ground and instead runs off as stormwater into the flood control district system.

PW is implementing stormwater improvement projects with six projects completed or nearing construction completion in 2022 (per the OurCounty 2022 Annual Report published in December 2022). These stormwater improvement projects will assist in recharging local aquifers, preventing pollution from entering water bodies, and using stormwater runoff for local irrigation.

SW-1: Waste Diversion Goal (Ongoing)

The Conversion Technology Program established numerical milestones to measure implementation progress in the unincorporated Los Angeles County. The program aims to increase the current in-County capacity from 65 tons per day (tpd) to 3,000 tpd by 2035. The County is developing multiple waste diversion projects and is on track to achieve the next milestone of 500 tpd of in-County waste conversion capacity by 2025.

PW prepared draft revisions to an existing ordinance to increase the construction and demolition debris recycling requirement from 50 to 70 percent for projects in the unincorporated areas. Stakeholder outreach meetings were held in November 2020 and June 2021. The ordinance update is expected to be completed in 2023. In November 2010, the Board adopted an ordinance that prohibits the distribution of single-use plastic carryout bags at certain stores in unincorporated Los Angeles County and requires the stores to charge 10 cents for each paper or alternative bag provided to a customer.

The County's "Plastic Straws and Stirrers Upon Request" ordinance prohibits all food service businesses in unincorporated Los Angeles County from providing single-use plastic straws or stirrers to customers unless requested by the customer. In October 2019, the Board of Supervisors passed a motion directing CSO to contract with the UCLA Luskin Center for Innovation to study the issues of plastic waste, processing and recyclability of plastic materials, and potential disposal and recycling alternatives in unincorporated Los Angeles County. PW also developed the Bring Your Own (BYO) campaigns to encourage the use of reusable items, such as plates, cups, utensils, and bags, and increase awareness of the environmental impacts of single-use items. In April 2022, the Board of Supervisors passed a follow-up ordinance that phases out single-use plastics for food service ware in unincorporated Los Angeles County in favor of reusable, recyclable, or compostable options.

In 2018, PW launched the Food Donation Recovery and Outreach Program, or "Food DROP," to facilitate the recovery of edible food to feed those in need instead of being disposed. As of 2022, there were four landfill gas-to-energy facilities in unincorporated Los Angeles County, with a total installed (rated) renewable energy generation capacity of 96 MW.

LC-1: Develop Urban Forests (Ongoing)

The County adopted the Tree Planting Ordinance in 2016, amending Title 21 (Subdivisions) and Title 22 (Planning and Zoning) of the County Code to establish new tree planting requirements for projects to provide environmental benefits. That ordinance was repealed and can now be found in Title 31 (Green Building Standards) of the County Code.

The Tree Committee of the County's Healthy Design Workgroup coordinates interdepartmental efforts to preserve, maintain, and expand the unincorporated Los Angeles County's urban forest in low income, tree-poor neighborhoods. In 2018, County departments collaborated with community-based organizations to complete a youth-led tree planting and education campaign, resulting in more than 1,600 trees planted in low-tree-canopy, disadvantaged areas of the San Gabriel Valley; the project resulted in approximately 100 youth trained on life skills, job skills, and tree benefits, planting, and care. In addition, more than 1,500 households received education about the benefits of trees.

In 2019, County departments led a second tree planting and community education project, this time in unincorporated West Athens. By completion, the West Athens tree planting and education project will have resulted in 650 trees planted. Additionally, during 2018–2019, PW planted more than 4,000 new parkway trees.

The County secured \$1.5 million in funding from the state in 2021 to develop an urban forest management plan and is in the process of creating the plan.

LC-2: Create New Vegetated Open Space (Ongoing)

DRP amended the zoning code to allow selected accessory uses within utility easements, such as parks, open space, and limited agricultural uses, with development standards and streamlined review procedures. This was adopted as part of the CCAP Implementation Ordinances on June 6, 2018.

In 2022, DPR completed the Regional and Rural Edition of the Countywide Parks Needs Assessment, which focuses on regional recreation needs and the park needs of rural communities, and identifies areas, including open space and natural areas, that should be prioritized for conservation in the future.

LC-3: Promote the Sale of Locally Grown Foods and/or Products

DRP amended the zoning code to implement the state law AB 551, the Urban Agriculture Incentive Zones Act. This ordinance provides procedures to incentivize growing local foods on private property and was adopted by the Board of Supervisors in April 2016.

LC-4: Protect Conservation Areas

DRP amended the zoning code to update the County's Significant Ecological Areas Ordinance. The update guides development to areas that would create the least impact on environmental resources on private properties. It also contains requirements for conservation where resources are affected. This ordinance was adopted by the Board of Supervisors in December 2019. In 2018, DPR amended the zoning code to allow selected accessory uses within utility easements, such as parks, open space, and limited agricultural uses, with development standards and streamlined review procedures.

C.2 OurCounty Sustainability Plan

OurCounty outlines a long-term vision for implementing sustainable actions that improve equity, the environment, and the economy across Los Angeles County. With the adoption of OurCounty in August 2019, more than 60 priority actions are being implemented by various County departments. County departments regularly engage with partners and stakeholders to prioritize implementation and add new actions in a process that ensures accountability and progress. Although all sustainability goals, strategies and actions in OurCounty are considered important, they are all in varying stages of the planning and implementation process. The OurCounty 2022 Annual Report published in Fall 2022 provides an update on priority actions implemented in the previous year and helps inform prioritization of actions for 2023, including a call for action on low-cost, high-impact strategies for local climate action supported by community organizations.

This section lists the strategies and actions from OurCounty that align most closely with the 2045 CAP strategies, as identified in Chapter 3. Many of these are also priority actions currently being implemented and monitored through the CSO's Annual Report, focused on equitable and sustainable land use and development, thriving ecosystems and biodiversity, and a transition to zero-emission energy and transportation systems.

Strategy 2B: Require sustainable and healthy building design and construction.

- **Action 32:** Pilot high performance building standards for new County buildings beyond the current LEED Gold standard, such as Passive House, Zero Net Energy, Net Zero Water, Net Zero Waste, the Living Building Challenge and the WELL Building Standard.
- **Action 33:** Use climate projections instead of historic data for weather and precipitation modeling to inform planning, infrastructure, and community development processes.

Strategy 2D: Ensure a climate-appropriate, healthy urban tree canopy that is equitably distributed.

- **Action 43:** Create and implement a community-informed Urban Forest Management Plan that incorporates equitable urban forest practices, identifies County funding sources, and prioritizes:
 - Tree- and park-poor communities;
 - Climate and watershed-appropriate and drought/pest-resistant vegetation;
 - Appropriate watering, maintenance, and disposal practices;
 - Shading; and
 - Biodiversity.
- **Action 44:** Implement locally tailored, youth-based tree and vegetation planting and maintenance projects in collaboration with community-based organizations to reduce the impacts of heat island in low canopy areas.
- **Action 45:** Strengthen tree protections of native tree species, such as through development of an ordinance, based on findings from the Urban Forest Management Plan (UFMP).

Strategy 3A: Increase housing density and limit urban sprawl.

- **Action 46:** Develop land use tools that will facilitate increased production of various housing types such as duplex and triplex buildings, where appropriate.
- **Action 47:** Support the preservation of agricultural and working lands, including rangelands, by limiting the conversion of these lands to residential or other uses through tools such as the creation of agricultural easements, particularly within high climate-hazard areas and Significant Ecological Areas (SEAs).
- **Action 48:** Evaluate the feasibility of establishing a County brownfields program.

Strategy 3B: Implement transit-oriented development.

- **Action 49:** Expand the number and extent of transit-oriented communities while ensuring that vital public amenities such as parks and active transportation infrastructure are included.
- **Action 50:** Create an inventory of all publicly-owned land and facilities (belonging to the County and other jurisdictions) near existing and future public transit and identify opportunities for transit-oriented development.
- **Action 51:** Create guidance language for joint development opportunities on County-owned land, drawing upon Metro's Joint Development Program, Policies, and Process and actively seek opportunities for joint development that improves transit access.

Strategy 3C: Promote walkable, mixed-use neighborhoods.

- **Action 52:** Promote walkability through various tools, including zoning that enables a mix of uses, and pedestrian enhancements.
- **Action 53:** Develop equitable design guidelines that promote high quality living environments for all.

Strategy 5A: Increase ecosystem function, habitat quality, and connectivity, and prevent the loss of native biodiversity in the region.

- **Action 66:** Create a Countywide Biodiversity Index to generate a quantitative evaluation/assessment tool for measuring species richness, distribution, and threats to native biodiversity, and use the index to set targets to preserve biodiversity and inform the development of biodiversity strategies.
- **Action 67:** Develop a wildlife connectivity ordinance.
- **Action 68:** Establish comprehensive and coordinated management guidelines for local waterways, which balance priorities such as water management, flood risk mitigation, habitat, biodiversity, and community preference.
- **Action 69:** Make urban ecology a key consideration in municipal initiatives, including but not limited to open space plans, green infrastructure projects and development plans.
- **Action 70:** Increase coordination amongst and expand training of County and affiliated personnel with regards to promoting native and climate-resilient species selection, biodiversity, habitat quality, and connectivity.
- **Action 71:** Increase the number of native plants, trees, and pollinator/bird friendly landscapes on public properties for education and habitat connectivity.

Strategy 5B: Preserve and enhance open space, waterways, and priority ecological areas.

- **Action 72:** Develop a Countywide parks and open space master plan to acquire, preserve, restore, and protect available open space areas, and improve public access to open space, especially for residents in high park need areas.

- **Action 73:** Develop and implement a strategy to preserve and protect priority ecological sites, supporting sites, and priority species (including but not limited to significant ecological areas, habitat connections, terrestrial streams, wetlands, and aquatic habitats).

Strategy 7A: Transition to a zero-carbon energy system that reduces air and climate pollution and that minimizes the dangers of a changing climate to our communities and economy.

- **Action 84:** Collaborate with the City of Los Angeles and other cities to develop a sunset strategy for all oil and gas operations that prioritizes disproportionately affected communities.
- **Action 85:** Collaborate with the City of Los Angeles, Santa Monica, and other members of the Building Decarbonization Coalition to develop building energy and emissions performance standards that put the County on a path towards building decarbonization.
- **Action 86:** Develop a publicly-accessible community energy map that identifies opportunities for deploying distributed energy resources and microgrids in order to improve energy resiliency in disadvantaged communities.
- **Action 87:** Investigate low- or no-cost options to provide community shared solar facilities on County property.
- **Action 88:** Maximize the installation of solar and energy storage systems on County property whenever cost-effective.
- **Action 89:** Support development of an equitable investment plan that identifies needed improvements to electricity and natural gas transmission, distribution, and storage systems and supports local renewable energy resources.
- **Action 90:** Develop and implement a strategy to eliminate fossil fuels in County operated co-generation facilities.

Strategy 7B: Create a zero-emission transportation system.

- **Action 91:** Streamline permitting and construction of zero-emission vehicle infrastructure.
- **Action 92:** Install electric vehicle (EV) chargers at County facilities and properties for public, employee, and fleet use, prioritizing locations in disadvantaged communities.
- **Action 93:** Revise and regularly update the County's fleet policy to require zero-emission vehicles or better whenever available and operationally feasible.
- **Action 94:** Convert Sheriff's Department (LASD) fleet to zero emission by partnering with vehicle manufacturers to develop a zero emission pursuit vehicle and transport bus.
- **Action 95:** Partner with Los Angeles Fire Department (LAFD) and equipment manufacturers to pilot a zero emission fire engine.

Strategy 8A: Reduce vehicle miles traveled (VMT) by prioritizing alternatives to single-occupancy vehicles.

- **Action 96:** Partner with local jurisdictions and transit agencies such as the City of Los Angeles and Metro to develop and implement a "Transit First" policy and mobility advocacy campaign that is consistent with and supportive of the County's Vision Zero Plan.

- **Action 97:** Support Metro's efforts to study congestion pricing and amplify considerations of equity.
- **Action 98:** Install bus-only lanes and signal prioritization along major thoroughfares, and work with transit agencies and neighboring jurisdictions to plan and install full bus rapid transit infrastructure along priority corridors, as appropriate.
- **Action 99:** Develop and implement a comprehensive parking reform strategy, which should include, but not be limited to: elimination of minimum parking requirements for all new residential units, establishment of parking maximums within half a mile of high quality transit stops, creation and expansion of parking benefit districts, and incentives for developers to provide less than maximum allowable parking.
- **Action 100:** Offer free transit passes for students, youth, seniors, disabled, and low-income populations.
- **Action 101:** Develop and implement a transportation demand management (TDM) ordinance that requires developers to incorporate measures such as subsidized transit passes and car share.
- **Action 102:** Develop a transportation technology strategy to proactively address how evolving tech-enabled mobility options can support public transit and advance OurCounty goals.
- **Action 103:** Evaluate and implement demand-based priced parking at County facilities and on County streets where appropriate.
- **Action 104:** Pilot an alternative work site program for County employees.

Strategy 9A: Reduce waste generation.

- **Action 107:** In collaboration with the City of Los Angeles, develop and implement an equitable strategy to phase out single use plastics, including in County contracts and facilities.
- **Action 108:** Adopt and advocate for producer and manufacturer responsibility requirements.
- **Action 109:** Identify and implement, where appropriate, best practice waste pricing programs to reduce waste generation, including but not limited to differential prices for waste based on amount generated in the residential sector and reforms to tipping rate structures.
- **Action 110:** Conduct regular Waste Characterization Studies for sectors and sub-sectors and public space, including County facilities, to gather data on actual waste generation, composition, and recycling rates.
- **Action 111:** Pursue zero waste certification requirements at County facilities and develop incentives for businesses to achieve zero waste certification (e.g., TR UE Zero Waste).
- **Action 112:** Expand use of sustainable pavement methods and materials on County roadways.

Strategy 9B: Implement strong water conservation measures.

- **Action 113:** Develop a County-specific implementation plan for state water conservation targets that balances water supply goals with other critical OurCounty goals such as supporting conservation and expanding the urban forest.
- **Action 114:** Develop a Net Zero Water Ordinance for new development.
- **Action 115:** Adopt building code changes that improve water efficiency and reduce indoor and outdoor water use above current CALGreen standards.
- **Action 116:** Establish pilot programs for smart metering or sub-metering indoor and outdoor water use at County facilities.

Strategy 9C: Reduce building energy consumption.

- **Action 117:** Adopt an energy and water efficiency ordinance for existing buildings, requiring all privately owned buildings over 20,000 square feet to benchmark and report their energy and water use, and demonstrate their pathway to energy and water efficiency.
- **Action 118:** Expand and enhance the energy efficiency programs offered by the Southern California Regional Energy Network (SoCalREN).
- **Action 119:** Ensure that all County facilities over 25,000 square feet report their energy and water use to ENERGY STAR® Portfolio Manager®, perform retro-commissioning at those facilities with the greatest energy use and/or energy use intensity, and attain an ENERGY STAR® rating when cost-effective.

Strategy 9D: Capture organic waste and develop regional capacity for beneficial reuse.

- **Action 120:** Establish guidelines for large quantity food waste or green waste generators to perform on-site composting, mulching, or anaerobic digestion, and develop a marketing plan for the product.
- **Action 121:** Promote and communicate source separation, organic waste collection requirements, food waste reduction and donation, local organic waste recycling programs, and conduct targeted, sector-based educational campaigns.

Strategy 9E: Divert reusable and recyclable materials from landfills.

- **Action 122:** Expand and support existing countywide programs that incentivize the development of local upcycling and recycling markets and quality recycled materials.
- **Action 123:** Increase the diversion requirements in the County's Construction & Demolition debris ordinance, encourage the use of recycled-content materials in construction projects, and incentivize use of recycled materials in public art projects funded or commissioned by the County.
- **Action 124:** Establish rigorous recycling programs and requirements in County Departments.
- **Action 125:** Develop an equitable waste conversion facility siting and byproduct plan.

APPENDIX D

Planning Area Profiles

Every community in Los Angeles County has a role to play in reducing environmental impacts due to greenhouse gas (GHG) emissions and in reaching unincorporated Los Angeles County's (Unincorporated Los Angeles County's) GHG emissions reduction goals. Unincorporated communities are diverse in their demographics, geography, land use, and built form, and therefore the potential to reduce GHG emissions can vary significantly by community.

These profiles provide an overview of each of the 11 planning areas as outlined in the County of Los Angeles (County) General Plan. These planning profiles provide some information about the unincorporated areas from a climate action perspective and identify "Key Climate Actions" for each community. The profiles highlight select data points such as stationary energy emissions, population, exposure to pollution, health, and transportation patterns in each planning area. The planning profiles presented herein represent GHG emissions as they were quantified in 2020, using on-road transportation emission factors from the California Air Resources Board's (CARB's) EMFAC2017 model. The emissions inventory for the unincorporated Los Angeles County has since been revised using updated models including the more recent EMFAC2021 model, with the result showing that on-road transportation represents a lower percentage of overall unincorporated Los Angeles County emissions than estimated using the EMFAC2017 model. However, the revised emissions estimates do not affect the general conclusions regarding the key climate actions for each planning area, as the relative breakdown of emissions by sector remains roughly the same, with transportation and building energy constituting the majority of emissions in each planning area.

Transportation-related emissions from passenger vehicles and trucks account for more than half of all GHG emissions in unincorporated areas. Based on commute-to-work data, most planning areas seem to have a similar mode split. The Metro Planning Area has the lowest rates of driving

and the highest rates of transit use. However, without additional information about travel behavior, it is not possible to make meaningful interpretations about the distance traveled and transportation-related emissions in each community. Due to limited data availability, the Planning Area Profiles only note the commute mode split for each community.

Stationary energy, in particular building energy use, is responsible for about one-third of GHG emissions in unincorporated areas. A comparative analysis of stationary energy by planning area, population, sector, and fuel type is shown in Figures D-1, D-2, and D-3. Each area's unique characteristics inform "Key Climate Action" priority recommendations to maximize the GHG reductions for each planning area. Opportunities for emissions reductions exist in all communities. Some key observations are:

- The Metro Planning Area has the highest total emissions but has the lowest emissions per capita. Similarly, the East San Gabriel Valley has the second highest total emissions and the second lowest emissions per capita. These are also the two most populous planning areas.
- The Santa Monica Mountains and the San Fernando Valley have high emissions per capita, but very low overall emissions.
- Of the eight planning areas with a population over 20,000, the Santa Clarita Valley has the highest per capita emissions. The Gateway Planning Area has the highest emissions per capita of the four planning areas with a population over 100,000.
- The West San Gabriel Valley, the Antelope Valley, and the East San Gabriel Valley have high percentages of emissions from the residential sector.
- The Westside Planning Area has a high percentage of emissions from the commercial sector.
- The Gateway Planning Area has high percentage of emissions from the industrial sector. Industrial emissions not only contribute to climate change but may also contain more local air quality pollutants than emissions from other sectors.
- The Metro Planning Area and the West San Gabriel Valley have the highest consumption of natural gas.

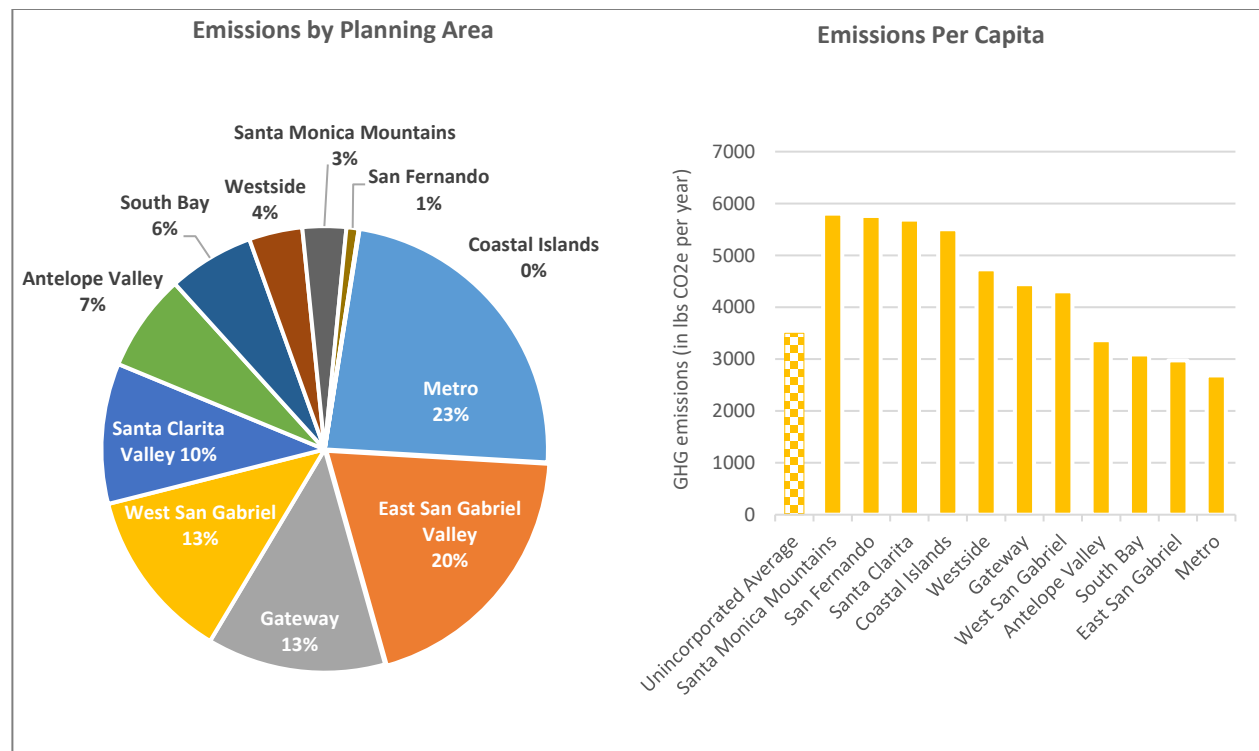


Figure D1: Stationary Energy Emissions Comparative Analysis

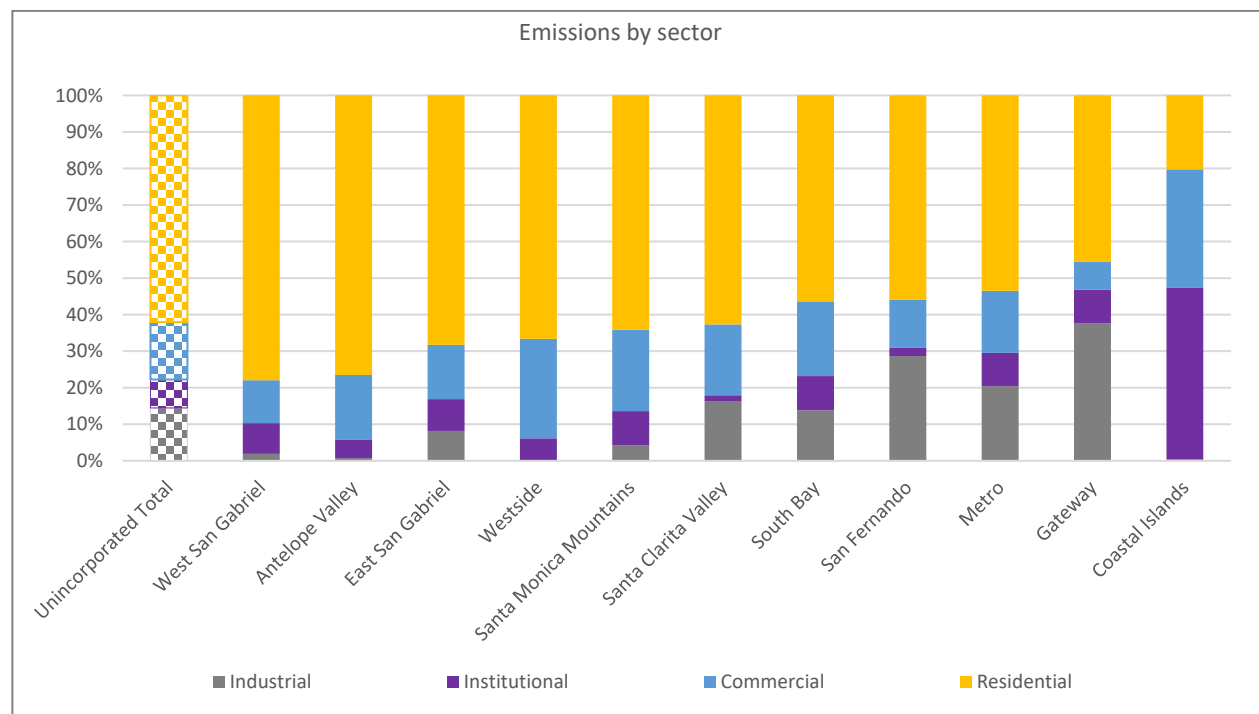


Figure D2: Stationary Energy GHG Emissions by Sector

NOTE: The figures presented above represent GHG emissions as they were quantified in 2020. The emissions inventory for the unincorporated Los Angeles County has since been revised. However, the relative breakdown of emissions by sector remains roughly the same.

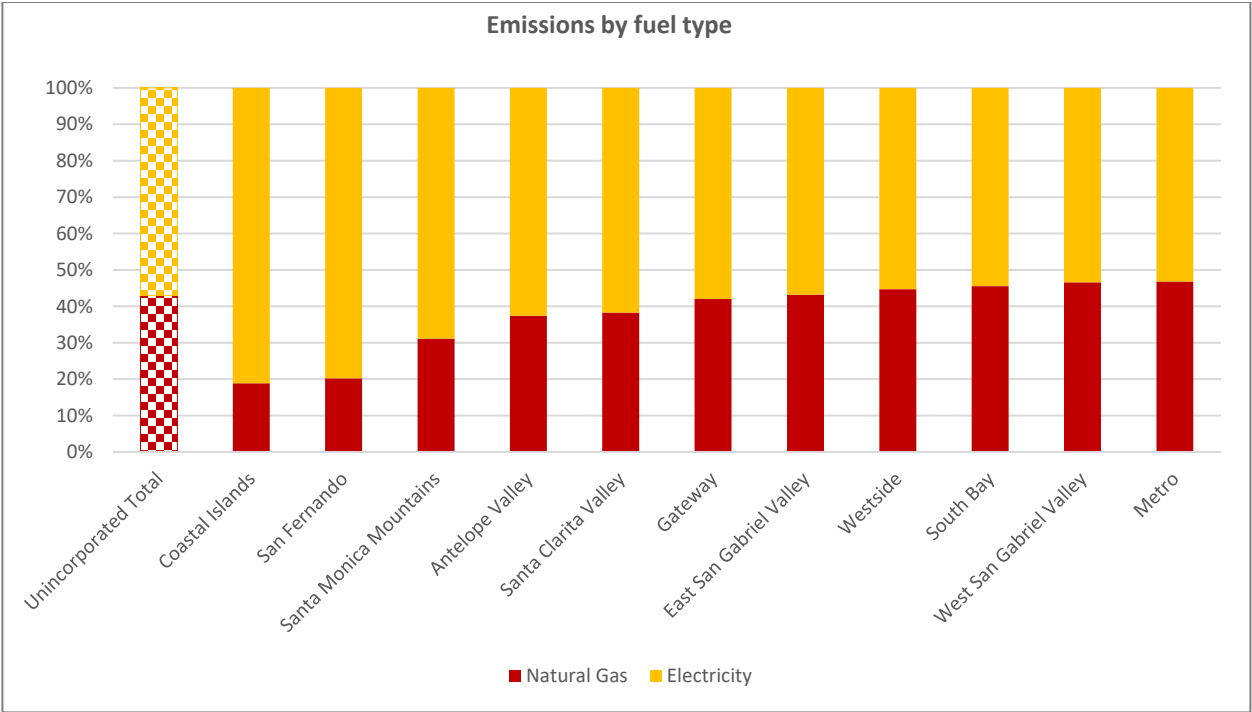


Figure D3: Stationary Energy GHG Emissions by Sector

NOTE: The figures presented above represent GHG emissions as they were quantified in 2020. The emissions inventory for the unincorporated Los Angeles County has since been revised. However, the relative breakdown of emissions by sector remains roughly the same.

Terms Used in Planning Area Profiles

PM_{2.5} Percentile: Particulate matter (PM) is a combination of solid and liquid droplets found in the air. PM can include dust, dirt, soot, or smoke. Some PM is large enough to be seen but other types are microscopic (fine PM with a diameter of less than 2.5 microns). Fine PM can travel deeply into the human respiratory tract and can cause health effects such as throat irritation, coughing, or asthma. The PM_{2.5} percentile indicates the concentration of fine PM in each planning area as compared to all census tracts in the state of California, as measured by CalEnviroScreen 3.0 (<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>, retrieved in October 2019).

Pollution Burden Percentile: Pollution Burden indicators are issues of widespread concern in California that the California Environmental Protection Agency's boards, departments, and offices can take action to remedy, divided into two categories: *Exposures* are pollutants that may come into direct contact with people, while *environmental effects* are adverse environmental conditions caused by pollutants. The Pollution Burden Percentile indicates the pollution burden score in each planning area compared to all census tracts in the state of California as measured by CalEnviroScreen 3.0 (<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>, retrieved in October 2019).

Asthma Percentile: Age-adjusted rate of asthma-related emergency department visits. Percentile is relative to all census tracts in the state of California. (<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>, retrieved in October 2019)

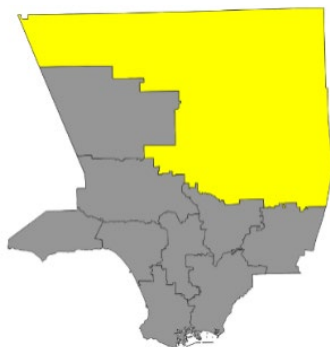
Estimated Population in Disadvantaged Communities: Unincorporated population in census tracts where 75 percent or more of the population is identified as disadvantaged as measured by CalEnviroScreen 3.0 (<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30>, retrieved in October 2019).

Estimated Population in High Quality Transit Areas (HQTAs): HQTAs are walkable areas within one-half mile of a well-served transit stop or a transit corridor, with 15-minute or better service frequency during peak commute hours. This indicator measures the population within unincorporated areas living within HQTAs. (SCAG RTP SCS, BuroHappold analysis)

Estimated Population in Transit Oriented District (TODs): Unincorporated population living within areas designated as TODs by the Los Angeles County Department of Regional Planning. (Los Angeles County DRP, BuroHappold analysis)

Drive Alone/Carpool/Transit: Percentage of travelers using a particular type of transportation for trips to work. (American Community Survey 2013–2017)

Stationary Energy Emissions: Emissions from stationary sources in unincorporated areas by sector.



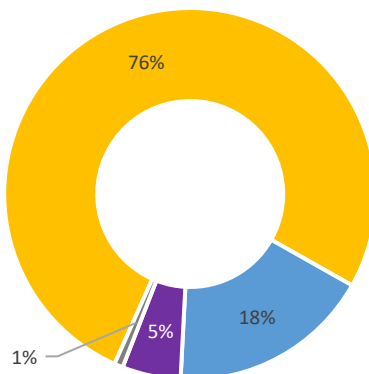
ANTELOPE VALLEY PLANNING AREA

The Antelope Valley Planning Area contains the majority of active agricultural land in Los Angeles County. The area faces a number of environmental challenges, including extreme heat, limited water supply, threats of wildfires, and floods. However, the Antelope Valley also contains some of the unincorporated Los Angeles County's richest sources of biodiversity as identified through the County's SEA Program. The area has a high rate of commuting by driving alone, but also has the highest bicycle mode split in unincorporated Los Angeles County (2 percent of trips to work are made by bicycle).

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	ANTELOPE VALLEY
Total Population	1,037,227	76,101
Estimated Population in HQTAs	330,000	4,000
Estimated Population in TODs	69,000	0
Drive Alone/Carpool/Transit	77% / 10% / 5%	80% / 11% / 1%
PM _{2.5} Percentile	63.6	14.5
Pollution Burden Percentile	62.3	25.2
Asthma Percentile	51.4	51.1
Estimated Population in Disadvantaged Communities	383,000	8,000

Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions supporting transportation electrification
- Actions to encourage biking and active transportation
- Actions to preserve agricultural and natural areas
- Actions decarbonizing agricultural practices
- Actions targeting zero carbon energy in wildfire-prone areas

NOTE: This figure and all figures presented below represent GHG emissions as they were quantified in 2020. The emissions inventory for the unincorporated Los Angeles County has since been revised. However, the revised emissions estimates do not affect the general conclusions regarding the key climate actions for each planning area, as the relative breakdown of emissions by sector remains roughly the same.



COASTAL ISLANDS PLANNING AREA

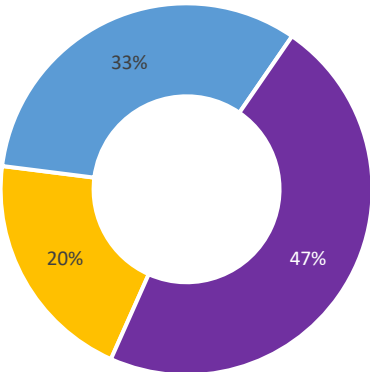
The Coastal Islands are characterized by rugged landscape and a cliffed shoreline. Much of Santa Catalina Island is protected natural space, but there is also a landfill on the island. The area has the lowest population, lowest GHG emissions, and lowest natural gas use of any planning area. Institutional uses are responsible almost half of the areas GHG emissions.

NOTE: Data are unavailable on health, pollution, and transportation patterns for the Coastal Islands Planning Area, but data are provided for population and energy use.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	COASTAL ISLANDS
Total Population	1,037,227	374
Estimated Population in HQTAs	330,000	0
Estimated Population in TODs	69,000	0

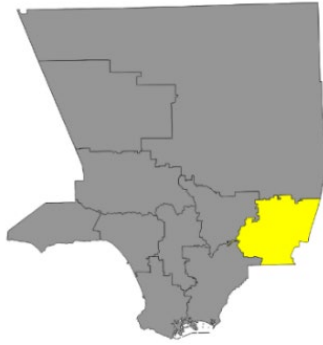
Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional



Key Climate Actions

- Actions to preserve agricultural and natural areas
- Actions relating to landfills and waste management
- Actions focused on reducing institutional emissions
- Consideration of opportunities to preserve and nourish the islands' kelp forests for their ability to sequester carbon



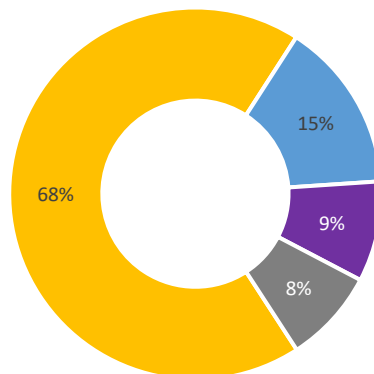
EAST SAN GABRIEL VALLEY PLANNING AREA

The East San Gabriel Valley Planning Area is characterized by valleys and rolling, dry hills. The northern portion of the planning area connects to Angeles National Forest and the San Gabriel Mountains. Wildfires and landslides pose safety hazards in the foothill communities. The East San Gabriel Valley Planning Area has the highest residential GHG emissions in unincorporated Los Angeles County. The area also has unincorporated Los Angeles County's highest rate of commuting by driving alone.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	EAST SAN GABRIEL VALLEY
Total Population	1,037,227	240,274
Estimated Population in HQTAs	330,000	38,000
Estimated Population in TODs	69,000	0
Drive Alone/Carpool/Transit	77% / 10% / 5%	80% / 9% / 3%
PM _{2.5} Percentile	63.6	71.7
Pollution Burden Percentile	62.3	67.9
Asthma Percentile	51.4	44.1
Estimated Population in Disadvantaged Communities	383,000	48,000

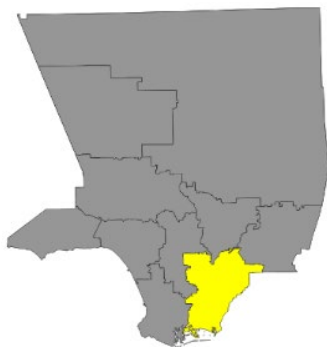
Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions focused on improving transit services
- Actions encouraging density and active transit near high quality transit
- Actions supporting transportation electrification
- Actions to reduce residential and commercial stationary energy emissions
- Actions focusing on disadvantaged/vulnerable communities
- Actions to preserve agricultural and natural areas
- Actions targeting zero carbon energy in wildfire-prone areas



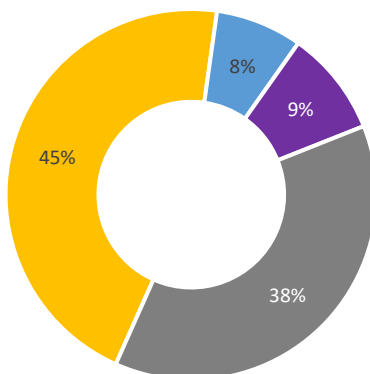
GATEWAY PLANNING AREA

The Gateway Planning Area has a large amount of built-out industrial land. The concentration of industrial uses and freight traffic impact air and water pollution in this area. The Gateway Planning Area also suffers from a lack of parks and recreational opportunities. The area has a high rate of commuting by driving alone, a high rate of natural gas emissions per capita, and the highest industrial emissions in unincorporated Los Angeles County. The Puente Hills landfill and material recovery facility is located in the planning area.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	GATEWAY
Total Population	1,037,227	105,641
Estimated Population in HQTAs	330,000	10,000
Estimated Population in TODs	69,000	600
Drive Alone/Carpool/Transit	77% / 10% / 5%	80% / 10% / 3%
PM _{2.5} Percentile	63.6	79.2
Pollution Burden Percentile	62.3	69.1
Asthma Percentile	51.4	62.6
Estimated Population in Disadvantaged Communities	383,000	57,000

Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions to reduce industrial stationary energy emissions
- Actions to limit oil and natural gas production
- Actions to reduce emissions from heavy-duty trucks
- Actions supporting transportation electrification
- Actions focusing on disadvantaged communities
- Actions to reduce vehicle miles traveled and traffic congestion
- Actions diverting waste from landfills
- Actions focused on building decarbonization



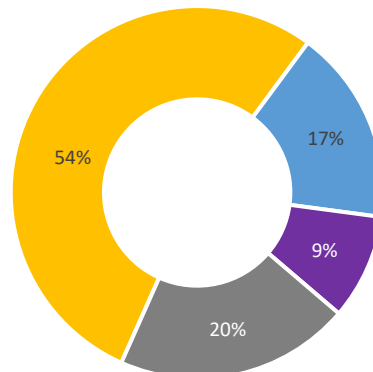
METRO PLANNING AREA

The majority of the Metro Planning Area is urbanized and there are no large areas of natural open space outside of parks and recreational areas. The presence of industrial districts in residential areas creates land use conflicts and health impacts. The planning area also suffers from traffic congestion and inadequate pedestrian and bicycle infrastructure. The Metro Planning Area has unincorporated Los Angeles County's lowest rate of driving alone, highest rate of commuting by transit, and highest rate of commuting by walking.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	METRO
Total Population	1,037,227	316,629
Estimated Population in HQTAs	330,000	208,000
Estimated Population in TODs	69,000	57,000
Drive Alone/Carpool/Transit	77% / 10% / 5%	72% / 12% / 9%
PM _{2.5} Percentile	63.6	83.6
Pollution Burden Percentile	62.3	80.4
Asthma Percentile	51.4	76.4
Estimated Population in Disadvantaged Communities	383,000	211,000

Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions focused on improving transit services
- Actions encouraging density near high-quality transit
- Actions to reduce vehicle miles traveled and traffic congestion
- Actions to encourage biking and active transportation
- Actions to limit oil and natural gas production
- Actions to reduce emissions from heavy-duty trucks
- Actions focusing on disadvantaged communities
- Actions to reduce all sources of stationary energy emissions
- Actions focused on building decarbonization



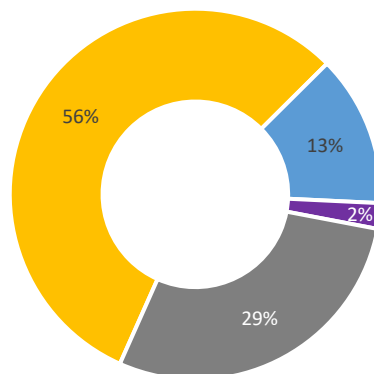
SAN FERNANDO VALLEY PLANNING AREA

The San Fernando Valley Planning Area is ringed with distinct hillsides and mountain ranges. Only a small portion of the planning area is unincorporated. These communities are primarily low-density, suburban communities. The area faces significant wildfire hazards.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	SAN FERNANDO VALLEY
Total Population	1,037,227	5,559
Estimated Population in HQTAs	330,000	0
Estimated Population in TODs	69,000	0
Drive Alone/Carpool/Transit	77% / 10% / 5%	79% / 9% / 2%
PM _{2.5} Percentile	63.6	49.9
Pollution Burden Percentile	62.3	38.1
Asthma Percentile	51.4	27.3
Estimated Population in Disadvantaged Communities	383,000	88

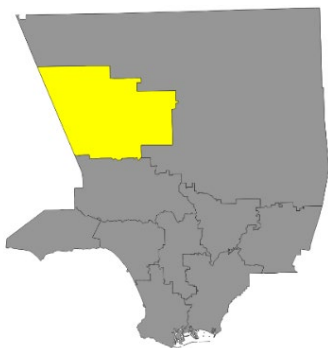
Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions to encourage biking and active transportation
- Actions supporting transportation electrification
- Actions targeting zero carbon energy in wildfire-prone areas
- Actions to preserve agricultural and natural areas
- Actions to expand urban forest areas and increase existing tree canopy



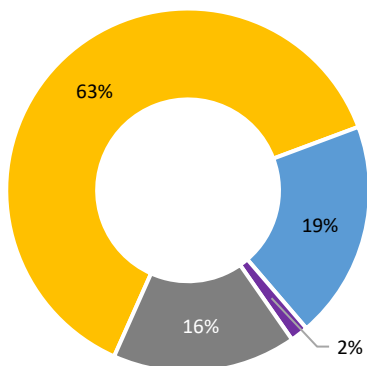
SANTA CLARITA VALLEY PLANNING AREA

The Santa Clarita Valley Planning Area is framed by mountain ranges and Angeles National Forest. The planning area is one of the fastest growing areas in Los Angeles County. Because of this rapid growth, the planning area faces multiple challenges related to infrastructure planning, preservation of open space, and reduction of vehicle miles traveled. The area has a high rate of commuting by driving alone, and the highest per capita natural gas emissions in unincorporated Los Angeles County.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	SANTA CLARITA VALLEY
Total Population	1,037,227	64,838
Estimated Population in HQTAs	330,000	0
Estimated Population in TODs	69,000	0
Drive Alone/Carpool/Transit	77% / 10% / 5%	79% / 9% / 2%
PM _{2.5} Percentile	63.6	33.2
Pollution Burden Percentile	62.3	38.9
Asthma Percentile	51.4	19.0
Estimated Population in Disadvantaged Communities	383,000	0

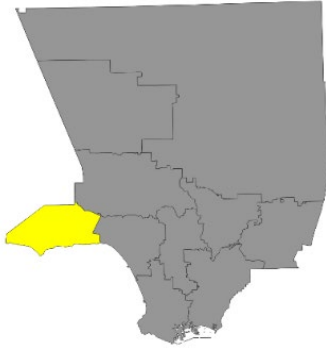
Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions supporting transportation electrification
- Actions to limit oil and natural gas production
- Actions to reduce commercial emissions
- Actions to preserve agricultural and natural areas
- Actions focused on building decarbonization
- Actions targeting zero carbon energy in wildfire-prone areas
- Actions to expand urban forest areas and increase existing tree canopy



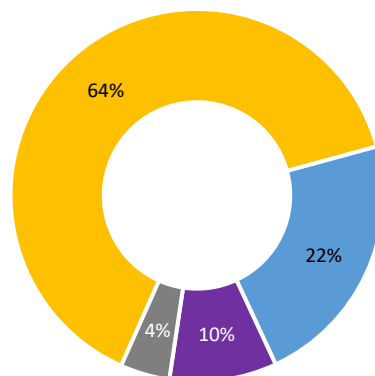
SANTA MONICA MOUNTAINS PLANNING AREA

The Santa Monica Mountains Planning Area is characterized by mountains, dry valleys, and beaches. The planning area's natural beauty comes with numerous environmental issues and natural hazards, including severe wildfire risks and landslides. The Calabasas Landfill is in the planning area.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	SANTA MONICA MOUNTAINS
Total Population	1,037,227	19,781
Estimated Population in HQTAs	330,000	0
Estimated Population in TODs	69,000	0
Drive Alone/Carpool/Transit	77% / 10% / 5%	78% / 5% / 1%
PM _{2.5} Percentile	63.6	46.7
Pollution Burden Percentile	62.3	42.8
Asthma Percentile	51.4	2.8
Estimated Population in Disadvantaged Communities	383,000	0

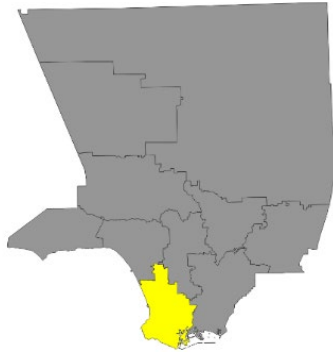
Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions to preserve natural areas
- Actions targeting distributed energy resources (DER) in wildfire-prone areas
- Actions relating to landfills and waste management



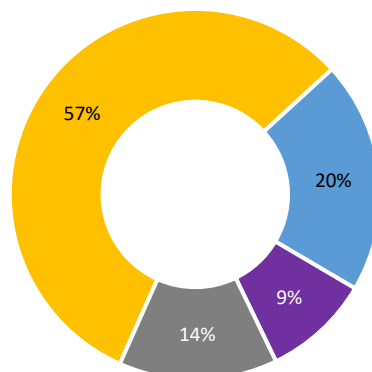
SOUTH BAY PLANNING AREA

The South Bay Planning Area is covered with hills, open spaces, and rocky shorelines along the Pacific Coast. Issues facing the planning area include traffic congestion, limited public transportation options, and air quality concerns. The region's proximity to LAX and the ports creates planning and air quality challenges. Petroleum refining is also a significant source of air pollution in the region.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	SOUTH BAY
Total Population	1,037,227	73,085
Estimated Population in HQTAs	330,000	32,000
Estimated Population in TODs	69,000	10,000
Drive Alone/Carpool/Transit	77% / 10% / 5%	77% / 10% / 4%
PM _{2.5} Percentile	63.6	78.1
Pollution Burden Percentile	62.3	83.1
Asthma Percentile	51.4	67.3
Estimated Population in Disadvantaged Communities	383,000	39,000

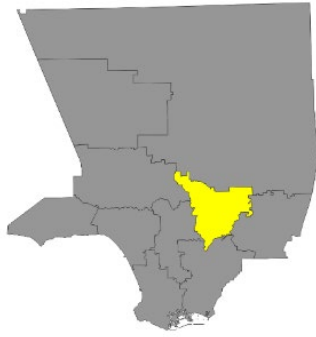
Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions to limit oil and natural gas production
- Actions focusing on improving transit services
- Actions encouraging density near high-quality transit
- Actions to reduce emissions from heavy-duty trucks
- Actions relating to landfills and waste management
- Actions focused on building decarbonization



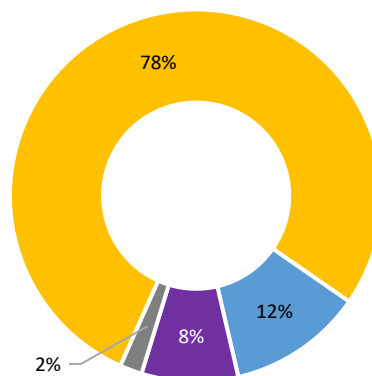
WEST SAN GABRIEL VALLEY PLANNING AREA

The West San Gabriel Valley Planning Area includes the foothills of the San Gabriel Mountains and Angeles National Forest. The San Gabriel River flows north-south along the planning area's eastern border. The planning area is almost entirely developed with historically suburban developments. Many of the communities are designated Very High Fire Hazard Severity Zones, which reflects the threat of wildfires and subsequent mudslides within those areas. The area has the third highest per capita natural gas emissions in unincorporated Los Angeles County.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	WEST SAN GABRIEL VALLEY
Total Population	1,037,227	105,252
Estimated Population in HQTAs	330,000	13,000
Estimated Population in TODs	69,000	2,000
Drive Alone/Carpool/Transit	77% / 10% / 5%	79% / 10% / 3%
PM _{2.5} Percentile	63.6	62.0
Pollution Burden Percentile	62.3	61.5
Asthma Percentile	51.4	32.6
Estimated Population in Disadvantaged Communities	383,000	16,000

Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions supporting transportation electrification and improved transit service
- Actions to encourage transit for youth and seniors
- Actions to reduce residential emissions
- Actions focused on building decarbonization
- Actions targeting zero carbon energy in wildfire-prone areas



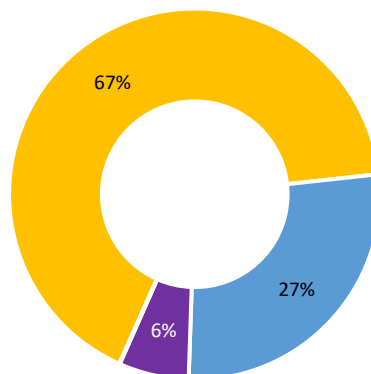
WESTSIDE PLANNING AREA

The Westside Planning Area is comprised of beaches, Marina del Rey, Baldwin Hills, and Kenneth Hahn State Park. Significant environmental resources exist in the planning area, most notably the Ballona Wetlands, which are threatened by potential sea level rise caused by climate change. Most of Ladera Heights/View Park–Windsor Hills is in a Very High Fire Hazard Severity Zone. The Westside Planning Area also includes a large urban oil field in Baldwin Hills. The area has low access to transit, but the second highest bicycle mode split in unincorporated Los Angeles County (2 percent). The area has the second highest per capita natural gas emissions in unincorporated Los Angeles County.

SECTOR/SUB-SECTOR	ALL UNINCORPORATED AREAS	WESTSIDE
Total Population	1,037,227	29,693
Estimated Population in HQTAs	330,000	26,000
Estimated Population in TODs	69,000	0
Drive Alone/Carpool/Transit	77% / 10% / 5%	76% / 7% / 3%
PM _{2.5} Percentile	63.6	75.5
Pollution Burden Percentile	62.3	71.8
Asthma Percentile	51.4	41.2
Estimated Population in Disadvantaged Communities	383,000	3,000

Stationary Energy Emissions by Sector

- Residential
- Commercial
- Institutional
- Industrial



Key Climate Actions

- Actions focusing on improving transit services
- Actions encouraging density near high-quality transit
- Actions to encourage biking and active transportation
- Actions to reduce commercial emissions
- Actions to limit oil and natural gas production
- Actions to reduce emissions from heavy-duty trucks
- Actions focused on building decarbonization

APPENDIX E

Implementation Details

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Table E-1 provides implementation details for the measures and actions discussed in Chapter 3. The “Performance Objectives” included in the table embody the specific objectives of the *2045 Los Angeles County Climate Action Plan* (2045 CAP) for each measure and action. These performance objectives represent guideposts for the successful implementation of each measure and the 2045 CAP as a whole. However, they are not specific mandates. As the 2045 CAP is implemented and adapted over time, many of these performance objectives may change. Greenhouse gas emissions reductions for 18 of the identified measures were quantified at the measure level based on these performance objectives, and monitoring will also occur at the measure level. Tracking metrics are intended to identify potential data that may be used to analyze GHG emission reductions and may be revised administratively. The table also identifies funding for all quantified measures. Additional future funding sources will need to be identified for non-quantified measures.

Table E-1: Greenhouse Gas Strategy, Measure, and Action Implementation Details

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
Strategy 1: Decarbonize the Energy Supply								
ES1 ^a	Develop a Sunset Strategy for All Oil and Gas Operations: Develop a sunset strategy for all oil and gas operations that prioritizes disproportionately affected communities and develop a strategy for carbon removal.			Reduce oil and gas operations: * <ul style="list-style-type: none">• 40% by 2030• 60% by 2035• 80% by 2045 Examine all active, idle, and abandoned oil wells for fugitive emissions of GHGs. Conduct carbon removal feasibility study. <i>* The performance objectives provided here serve as a general metric and may be refined upon completion of the Oil Well Amortization Study.</i>				
ES1.1	Collaborate with other local jurisdictions and utilities to develop a sunset strategy for all oil and gas operations that prioritizes disproportionately affected communities.	CSO, DRP	PW, ISD, cities, California Geologic Energy Management Division; DPH		<ul style="list-style-type: none">• Number of well sites decommissioned and remediated• Emissions reductions achieved through well decommissioning	Short term (2024–2030)	\$–\$\$	County General Fund
ES1.2	Develop a policy that requires the examination of idle and abandoned oil wells for fugitive emissions of GHGs to develop and implement a closure plan. Coordinate with federal and state agencies collecting fugitive emissions data.	CSO	DRP, PW, ISD, cities, California Geologic Energy Management Division; DPH		<ul style="list-style-type: none">• Number of oil wells examined• Amount of GHGs emitted (estimated or measured)	Short term (2024–2030)	\$–\$\$	County General Fund
ES1.3	Develop a carbon removal strategy that considers direct air capture and carbon capture and sequestration (CCS).	CSO	PW, DRP, ISD, CARB CCS Program		<ul style="list-style-type: none">• Number of CCS systems constructed• GHG emissions removed annually	Medium term (2030–2035)	\$–\$\$\$\$	Federal CIFIA Program, Infrastructure Investment and Jobs Act of 2021, SB 905, SB 1137, AB 1757, and SB 27
ES2 ^a (Core)	Procure Zero-Carbon Electricity: Supplying unincorporated Los Angeles County’s power demand with zero-carbon electricity is critical to achieving significant GHG emissions reductions. The Clean Power Alliance (CPA) is a nonprofit and community choice energy provider that currently serves 32 communities across Southern California.			Participate in CPA’s Green Power option, SCE’s Green Rate option, or other available 100% zero carbon electricity service: <ul style="list-style-type: none">• 100% municipal participation by 2025.• 96% community participation by 2030 (approximately 4% opt-out rate).				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
ES2.1	Transition all County facilities within unincorporated areas to CPA's 100% Green Power option, SCE's 100% Green Rate option, or other available 100% renewable electricity service. ^M	CSO, ISD	CPA, SCE, LA100		<ul style="list-style-type: none">• CPA 100% Green Power enrollment for County accounts• SCE's 100% Green Rate enrollment for County accounts• Enrollment in other available 100% renewable electricity service• Electricity supplied by CPA	Short term (2024–2030)	\$	Funded; Federal Inflation Reduction Act CARB Greenhouse Gas Reduction Fund, CARB California Climate Investments program, CPUC California Solar Initiative, CPUC Self-Generation Incentive Program, Low-Income Solar and Wind Investment Tax Credit, DOE Renewable Energy and Efficiency Energy grants
ES2.2	Complete enrollment of the community in CPA's 100% Green Power or SCE's Green Rate option.	CSO	CPA, SCE, LA100		<ul style="list-style-type: none">• CPA 100% Green Power participation and/or opt-out rate• Electricity supplied by CPA (MWh)• SCE 100% Green Rate participation and/or opt-out rate• Electricity supplied by SCE (MWh)	Short term (2024–2030)	\$\$	CPA Powershare Program, Federal Inflation Reduction Act CARB Greenhouse Gas Reduction Fund, CARB California Climate Investments program, CPUC California Solar Initiative, CPUC Self-Generation Incentive Program, Low-Income Solar and Wind Investment Tax Credit, DOE Renewable Energy and Efficiency Energy grants
ES3 ^a	Increase Renewable Energy Production: Expand local solar power generation on existing and new development and for County projects.			<p>Install rooftop solar PV on all existing single-family residential homes and multifamily residential buildings:</p> <ul style="list-style-type: none">• 20% by 2030• 25% by 2035• 35% by 2045 <p>Install rooftop solar PV on all existing commercial buildings:</p> <ul style="list-style-type: none">• 15% by 2030• 22% by 2035• 32% by 2045 <p>Install rooftop solar PV on all new multifamily residential buildings:</p> <ul style="list-style-type: none">• 80% by 2030• 85% by 2035• 95% by 2045 <p>Install rooftop solar PV on all new commercial buildings:</p> <ul style="list-style-type: none">• 40% by 2030• 50% by 2035• 70% by 2045 <p>Install 20,000 kW of solar PV at County facilities by 2030.</p> <p>Install rooftop solar PV at all affordable housing developments.</p>				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
ES3.1	Require rooftop solar PV for all new development.	PW	DRP, CSO		<ul style="list-style-type: none">Number of rooftop solar PV installations for all new developmentTotal kW solar capacity installed in community	Short term; implement ordinance immediately (2024)	\$	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, California Solar Energy System Property Tax Exclusion, CPUC Single-Family Affordable Solar Homes (SASH) Program, SCE Programs, Renewable Energy Production Tax Credit, Clean Electricity Investment Tax Credit, Low-Income Solar and Wind Investment Tax Credit, Greenhouse Gas Reduction Fund, Clean Energy Load Guarantees
ES3.2	Install rooftop solar PV at existing buildings.	PW	DRP, CSO		<ul style="list-style-type: none">Number of rooftop solar PV installations for existing multifamily residential buildings and existing commercial buildingsTotal kW solar capacity installed in community	Short term (2024–2030)	\$–\$\$\$	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, California Solar Energy System Property Tax Exclusion, CPUC Single-Family Affordable Solar Homes (SASH) Program, SCE Programs, Renewable Energy Production Tax Credit, Clean Electricity Investment Tax Credit, Low-Income Solar and Wind Investment Tax Credit, Greenhouse Gas Reduction Fund, Clean Energy Load Guarantees
ES3.3	Identify and install solar PV systems at existing viable County facilities and properties. ^M	ISD	PW, CSO, SCE, CPA		<ul style="list-style-type: none">Total MW solar capacity installed at County facilities	Short term (2024–2030)	\$\$\$	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, California Solar Energy System Property Tax Exclusion, SCE Programs, Renewable Energy Production Tax Credit, Clean Electricity Investment Tax Credit, Low-Income Solar and Wind Investment Tax Credit, Greenhouse Gas Reduction Fund, Clean Energy Load Guarantees
ES3.4	Explore the feasibility to install community-shared solar facilities on County properties where opportunities exist. ^M	ISD	PW, CSO, SCE, CPA		<ul style="list-style-type: none">Total community-shared MW solar capacity installed	Medium term (2030–2035)	\$\$\$	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, California Solar Energy System Property Tax Exclusion, SCE Programs, Renewable Energy Production Tax Credit, Clean Electricity Investment Tax Credit, Low-Income Solar and Wind Investment Tax Credit, Greenhouse Gas Reduction Fund, Clean Energy Load Guarantees

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
ES3.5	Require and incentivize renewable energy for affordable housing developments for both new development and existing buildings.	DRP, CSO, LACDA	PW, SCE, CPA		<ul style="list-style-type: none">• Number of rooftop solar PV installations• Total MW solar capacity installed	Short term; implement ordinance immediately (2024)	\$	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, California Solar Energy System Property Tax Exclusion, CPUC Single-Family Affordable Solar Homes (SASH) Program, SCE Programs, Renewable Energy Production Tax Credit, Clean Electricity Investment Tax Credit, Low-Income Solar and Wind Investment Tax Credit, Greenhouse Gas Reduction Fund, Clean Energy Load Guarantees
ES3.6	Streamline and prioritize permitting for solar and battery storage projects.	DRP	CSO, PW		<ul style="list-style-type: none">• Number of solar PV installations• Total MW solar capacity installed• Number of battery storage installations• Total MW battery capacity installed	Short term (2024–2030)	\$	Federal Solar Investment Tax Credit, CPUC Self-Generation Incentive Program, California Solar Energy System Property Tax Exclusion, CPUC Single-Family Affordable Solar Homes (SASH) Program, SCE Programs, Renewable Energy Production Tax Credit, Clean Electricity Investment Tax Credit, Low-Income Solar and Wind Investment Tax Credit, Greenhouse Gas Reduction Fund, Clean Energy Load Guarantees
ES4	Increase Energy Resilience: Expand energy storage and microgrids throughout the community and for County operations.			<ul style="list-style-type: none">• Achieve community electricity storage capacity equal to the community-wide 24-hour average usage by 2035/2045.• Achieve community electricity generation capacity equal to the communitywide 24-hour average usage by 2035/2045.• Establish a community resilience hub program to equip community-serving County facilities (e.g., libraries, rec centers, senior centers).• Provide solar and battery systems sufficient to support emergency cooling and other emergency functions. Partner with the local community for implementation.• Locate at least one hub in each County district, with a focus on vulnerable populations.• Install microgrids based on a feasibility study.• Obtain a grant and establish a program to support an energy efficiency and assurance program for facilities that are large energy users and support critical community functions.				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
ES4.1	Develop a program to deploy community resilience hubs at scale.	ISD, DRP	PW, CSO		<ul style="list-style-type: none">Amount of generation/storage capacity per hubNumber of community resilience hubsNumber of people who can be supported at each hub during emergencies (daytime and nighttime)	Short to medium term (2024–2035)	\$–\$\$	Leverage bulk purchasing for portfolio-scale implementation
ES4.2	Invest in energy storage and microgrids at critical County facilities through CPA's Power Ready Program. ^M	ISD	PW, CSO		<ul style="list-style-type: none">kW of energy storage capacity installed at County facilitiesNumber and capacity of microgrids established	Short to medium term (2024–2035)	\$\$\$	Power purchase agreement
ES4.3	Develop a publicly accessible community energy map that identifies opportunities for deploying distributed energy resources and microgrids to improve energy resiliency.	CSO	ISD, PW, SCE, CPA			Short term (2024–2030)	\$\$	SCE, CEC, CPUC
ES4.4	Conduct feasibility studies to identify priority areas for solar and storage, combined with building- and community-scale microgrids and alternative technologies such as fuel cells and grid paralleling, to support demand management, peak shaving, and load shifting to increase grid resilience. Study implementation, costs, barriers, and obstacles and identify partnerships. Adopt regulations that establish this use and standards for its development. Limiting peak energy demand can eliminate or reduce the use of high-carbon peaker plants.	ISD	CSO, PW, DRP, SCE, CPA		<ul style="list-style-type: none">Number of microgrids installed	Short to medium term (2024–2035)	\$	Leverage bulk purchasing for portfolio-scale implementation; power purchase agreements
ES4.5	Develop a Countywide program to promote energy efficiency and resilience measures in facilities providing critical community services.	ISD	CSO, PW, DRP, SCE, CPA, SoCalRen		<ul style="list-style-type: none">Number of efficiency projects implementedNumber of energy resilience projects implemented	Short to medium term (2024–2035)	\$\$	State or federal grant (CEC, DOE)
ES5	Establish GHG Requirements for New Development: Develop and implement requirements for new projects choosing to streamline their GHG impacts analysis under CEQA to ensure that such new development is consistent with the 2045 CAP goals as well as its milestone targets for 2030, 2035, and 2045. These requirements include applicant completion of a 2045 CAP CEQA streamlining checklist for non-CEQA-exempt new development requiring discretionary approvals to demonstrate consistency with the 2045 CAP and thereby streamline environmental review of their GHG impacts using the 2045 CAP's PEIR pursuant to CEQA Guidelines Section 15183.5(b). To demonstrate compliance with the 2045 CAP CEQA streamlining requirements, all projects that do not screen out of the 2045 CAP consistency review process must implement either (1) all feasible applicable checklist measures or (2) for infeasible checklist measures, alternative project emission reduction measures. The project review checklist will be used for projects consistent with the 2045 CAP, to demonstrate CAP consistency that allows for streamlined project-specific CEQA GHG analysis. In addition, the County will assess the feasibility of developing a GHG offsets/credit program to create a pathway toward achieving the aspirational 2045 goal of carbon neutrality.			<ul style="list-style-type: none">All new development that does not require a General Plan amendment and opts to use CEQA streamlining for GHG impacts shall be consistent with the 2045 CAP.Develop reach codes, ordinances, and conditions of approval as needed.				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
ES5.1	Identify new requirements for new development, including reach codes, ordinances, and conditions of approval to reduce GHG emissions from energy use, transportation, waste, water, and other sources. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability.	DRP, CSO	PW, ISD		<ul style="list-style-type: none">Number and type of projects performing consistency review	Short term (2024–2030)	\$-\$\$	County General Fund
ES5.2	Implement the 2045 CAP CEQA streamlining checklist for new development to demonstrate consistency with the 2045 CAP's strategies, measures, and actions for purposes of streamlining environmental review of GHG impacts using the 2045 CAP's PEIR pursuant to CEQA Guidelines Section 15183.5(b).	DRP	PW		<ul style="list-style-type: none">Number and type of projects performing consistency review	Short term (2024–2030)	\$	County General Fund
ES5.3	Establish an Offsite GHG Reduction Program for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment.	DRP	PW		<ul style="list-style-type: none">Dollars invested into Offsite GHG Reduction ProgramNumber of off-site projects implementedQuantity of GHG emission reductions achieved	Short term (2024–2030)	\$	Project developers
Strategy 2: Increase Densities and Diversity of Land Uses Near Transit								
T1 ^a	Increase Density Near High-Quality Transit Areas: Increase housing opportunities that are affordable and near transit, to reduce VMT.			<ul style="list-style-type: none">Implement and complete Housing Element Update rezoning programs to achieve the minimum densities.Achieve a minimum of 20 dwelling units (DU) per acre (maximum of 30–150 DU per acre) for HQTAs.Locate a majority of residential and employment centers in unincorporated Los Angeles County within 1 mile of an HQTA.Achieve a 27% increase in DUs within HQTAs.				
T1.1	Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure.	DRP	SCAG, Metro		<ul style="list-style-type: none">Number and percent of increase in DUs in HQTAs	Housing Element time frame (2021–2029)	\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T1.2	Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing.	DRP	Cities, Metro, and other transit agencies, SCAG		<ul style="list-style-type: none">Number and percent increase in DUs within HQTATotal acres of commercial or industrial zones in HQTAs that can support jobs	Short term (2024–2030)	\$\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T2 ^a	Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use: Increasing density and the mix of land uses can help reduce single-occupancy trips, the number of trips, and trip lengths.			<ul style="list-style-type: none">By 2030, achieve a job density of 300 jobs per acre.For communities with an imbalance of jobs/housing (±20%), develop community plans to identify and quantify strategies for bringing that imbalance below 20%.				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T2.1	Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT.	DRP	PW		<ul style="list-style-type: none">• Comparison between existing and future statistics for employment and housing density and totals within each area• Number and % increase in DUs in HQTAs• Total acres of commercial or industrial zones in HQTAs that can support jobs	Housing Element time frame (2021–029)	\$\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
Strategy 3: Reduce Single-Occupancy Vehicle Trips								
T3 ^Q	Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips: Travel options that serve a variety of land uses and trip purposes can help shift some trips away from single-occupancy vehicles.			<ul style="list-style-type: none">• Increase bikeway miles 300% by 2035.• Implement the County’s Bicycle Master Plan.• Complete updates to the County’s Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans every five years.				
T3.1	Create a more connected and safer bikeway network by expanding bikeway facilities and implementing protected and separated lanes.	PW	DRP, Metro, transit providers		<ul style="list-style-type: none">• Miles of bikeways by route type	Long term (2035–2045)	\$\$\$\$	Road reconstruction funds, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T3.2	Implement and regularly update the County’s Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans.	DPH, PW	DRP, Metro, transit providers			Long term (2035–2045)	\$\$\$\$	County General Fund, Bikeway funds, Supervisor TIP funds, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T3.3	Collaborate with Metro and other transit providers to enhance pedestrian and bicycle environments through energy efficient lighting and shading to promote active transportation. Build shade structures at major transit stops, such as those identified in Metro’s Active Transportation Strategic Plan, prioritizing communities with high heat vulnerability. Develop and implement a Shaded Corridors Program.	DRP, PW	Metro, transit providers, Parks, DPH, DRP		<ul style="list-style-type: none">• Number and location of shade and lighting projects planned and completed	Medium term (2030–2035)	\$\$\$	Partial funding secured; additional funds required, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4 ^Q	Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: Transit service, micro mobility services (such as bike-share, scooter-share, and drone deliveries), and access to these transportation options can help reduce VMT.			<ul style="list-style-type: none">• By 2030, double transit service hours from 560,000 to 1.12 million.• By 2030, install bus-only lanes and signal prioritization on all major transit thoroughfares.• By 2030, ensure that 75% of unincorporated Los Angeles County residents live within one-half mile of shuttle or mobility service.				
T4.1	Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit, autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles.	PW	ISD; transit providers including Metro, Foothill Transit, Long Beach Transit, and Montebello Bus Lines LA		<ul style="list-style-type: none">• Size of area served• Number of employees and residents served• Service frequency and headways	Medium term (2030–2035)	\$\$\$\$	New funds required, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T4.2	Collaborate with Metro and other transit providers to install bus-only lanes and/or signal prioritization along major thoroughfares, and work with transit agencies and neighboring jurisdictions to plan and install full bus rapid transit infrastructure along priority corridors, as appropriate.	PW	Metro, transit agencies, other cities		<ul style="list-style-type: none">• Increase in service frequencies• Decrease in headways• Increase in residents/employees served• Number and percentage of bus-only lanes installed on transit routes• Travel time reliability	Long term (2035–2045)	\$\$\$\$	New funds required, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.3	Collaborate with Metro and other transit providers to develop a transportation technology strategy to proactively address how evolving tech-enabled mobility options can support public transit.	PW	Metro, transit agencies, CSO, DPH			Medium term (2030–2035)	\$	New funds required, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.4	Collaborate with Metro and other transit providers to set aside maintenance funds to ensure that public transit facilities, including stations and stops, are safe and clean to enhance the transit experience and increase ridership.	PW	Metro, transit agencies, CSO, DRP, LASD		<ul style="list-style-type: none">• Maintenance or increase in level of maintenance funds	Short term (2024–2030)	\$	New funds needed, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.5	Collaborate with Metro and other transit providers to develop and implement a transportation demand management (TDM) ordinance that requires future development projects to incorporate measures such as subsidized transit passes and car share.	PW	Metro, transit agencies, CSO, DRP		<ul style="list-style-type: none">• Mode share, commute trips, and parking occupancy at the tenant and building level• Number of employers participating in TDM program	Short to medium term (2024–2035)	\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.6	Offer free and/or discounted transit passes for students, youth, seniors, people with disabilities, and low-income populations.	PW	Metro, transit agencies, CSO, DRP		<ul style="list-style-type: none">• Number of free transit passes issued• Number of discounted transit passes issued	Short term (2024–2030)	\$	Proposition A Local Return Transit fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.7	Expand and improve the County’s Telecommuting Policy, using data gathered through the alternative work program.	ISD, DHR	CSO, DRP, PW, SCAG		<ul style="list-style-type: none">• Number of employers participating in telecommuting policies• Number of employees actively telecommuting	Short term (2024–2030)	\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.8	Establish temporary and permanent car-free areas.	DRP	PW, cities		<ul style="list-style-type: none">• Number and location of car-free areas in unincorporated Los Angeles County for each target year	Long term (2035–2045)	\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.9	Develop a VMT bank or exchange program.	PW	DRP, CSO		<ul style="list-style-type: none">• Implementation of exchange program for use in project development	Short to medium term (2024–2035)	\$\$\$	County General Fund, Greenhouse Gas Reduction Fund, Neighborhood Access and Equity Grants
T4.10	Collaborate with Metro and other transit providers to ensure that all new forms of public transportation (e.g., new bus lines, new light rail service) are low- or zero-emission.	CSO	Metro, transit agencies, DRP, PW		<ul style="list-style-type: none">• Number of ZEV buses• Number of ZEV shuttles• Total ZEV percentage of bus and shuttle fleet	Short to medium term (2024–2035)	\$\$\$	Caltrans grant, CARB Bus Replacement Grant, CARB Hybrid and Zero Emission Truck and Bus Voucher Incentive Project, Federal Zero-Emission Transit Bus Tax Exemption, CARB California Clean Mobility Options Voucher Pilot Program, SCE Charge Ready Transit Bus Pilot and Charge Ready Transport, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, New EV Tax Credit, Commercial EV Tax Credit

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T5	Limit and Remove Parking Minimums: Parking strategies such as parking maximums, unbundling parking, or market-price parking can help reduce VMT.			<ul style="list-style-type: none">• Reduce parking stipulations to reduce parking supply and encourage transit use.• Unbundle parking costs to reflect cost of parking.• Implement parking pricing to encourage "park-once" behavior.				
T5.1	Implement a comprehensive parking reform strategy, which should include, but not be limited to: elimination of minimum parking requirements for all new residential units, establishment of parking maximums within one-half mile of high-quality transit stops, creation and expansion of parking benefit districts, development of planning strategies for transitioning land dedicated to parking to alternative transit and public uses, and incentives for developers to provide less than maximum allowable parking.	DRP	PW		<ul style="list-style-type: none">• Percent change in parking supply• Number of new and expanded parking benefit districts• Mode shift surveys in areas/ buildings with reduced/ unbundled/priced parking	Short term (2024–2030)	\$\$-\$\$\$	LEAP Grant
Strategy 4: Institutionalize Low-Carbon Transportation								
T6 ^a (Core)	Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales: Increase unincorporated Los Angeles County's ZEV market share and vehicle penetration to the maximum extent feasible to replace internal combustion engine vehicles. Set targets for reducing total gasoline and diesel vehicle fuel sales.			<p>Increase the fleetwide percentage of light-duty vehicles in unincorporated Los Angeles County that are ZEVs to:*</p> <ul style="list-style-type: none">• 30% by 2030• 50% by 2035• 90% by 2045 <p>Increase the sales of new light-duty vehicles in unincorporated Los Angeles County that are ZEVs to: *</p> <ul style="list-style-type: none">• 68% by 2030• 100% by 2035 <p>Install the following total number of new public and private shared EVCSs:</p> <ul style="list-style-type: none">• 37,000 by 2030• 74,000 by 2035• 140,000 by 2045 <p>Install the following total number of new EVCSs at County facilities and properties:</p> <ul style="list-style-type: none">• 5,000 by 2030• 10,000 by 2035• 25,000 by 2045				
T6.1	Develop a Zero Emission Vehicle Master Plan. Collaborate with other regional agencies and jurisdictions to share infrastructure.	CSO	DRP, PW, ISD		<ul style="list-style-type: none">• Number of ZEVs registered and number of non-ZEVs registered• Total sales of gasoline and diesel fuel in unincorporated Los Angeles County• Total number of gas stations decommissioned• Specific tracking metrics for ZEV infrastructure and ZEV adoption to be identified in the plan	Short term (2024–2025)	\$	TBD

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T6.2	Install EVCSs at existing buildings and right-of-way infrastructure throughout unincorporated Los Angeles County.	CSO, ISD	PW		<ul style="list-style-type: none">Number, location, and availability of EVCSs	Short to long term (2024–2045)	\$\$\$	CEC CALeVIP and EVSE Rebates, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal EV Charging Tax Credit, SCAQMD and MSRC Residential EV Charging Incentive Pilot Program, CARB Clean Fuel Reward and CALeVIP, CalCAP EV Charging Station Financing Program for small businesses, Federal Inflation Reduction Act EV tax credits and other financial incentives, CARB Greenhouse Gas Reduction Fund
T6.3	Require all new development to install EVCSs through a condition of approval/ordinance. Residential development must install EVCSs; nonresidential development must install EVCSs at a percentage of total parking spaces.	DRP	PW		<ul style="list-style-type: none">Number, location, and availability of EVCSs	Short term (2024–2030)	\$	SCE Charge Ready Program, EVSE rebates, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal EV Charging Tax Credit, SCAQMD and MSRC Residential EV Charging Incentive Pilot Program, CARB Clean Fuel Reward and CALeVIP, CalCAP EV Charging Station Financing Program for small businesses, Federal Inflation Reduction Act EV tax credits and other financial incentives, CARB Greenhouse Gas Reduction Fund
T6.4	Install EVCSs at County facilities and properties for public, employee, and fleet use, prioritizing locations in frontline, BIPOC, and disadvantaged communities. Complete an assessment of EV charging locations, identifying gaps in publicly accessible stations for frontline, BIPOC, and disadvantaged communities. Provide EV purchase incentive information in multiple languages to frontline communities.	ISD	Fire, LASD, PW, Parks, Beaches and Harbors		<ul style="list-style-type: none">Number, location, and availability of EVCSs	Short to long term (2024–2045)	\$\$\$	CEC CALeVIP EVSE rebate, SCAQMD Alternative Fuel Vehicle and Fueling Infrastructure Grants, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal EV Charging Tax Credit, CARB Clean Fuel Reward and CALeVIP, Federal Inflation Reduction Act EV tax credits and other financial incentives, CARB Greenhouse Gas Reduction Fund
T6.5	Continue to pilot vehicle-grid integration applications at workplaces to maximize the benefits that daytime charging for plug-in electric vehicles (PEVs) can have on the grid, including demand response to reduce peak loads and energy storage during periods of renewable overproduction.	ISD, PW	SCE, CSO, DRP, ISD			Short term (2024–2030)	\$	SCE Charge Ready Program, CARB Greenhouse Gas Reduction Fund

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T6.6	Expand electric options for active transportation, such as electric scooters and e-bikes. Provide access to neighborhood electric vehicles, such as golf carts, shared EVs, and others. Develop policies and/or ordinances to expand these options.	CSO	DRP, PW, ISD		<ul style="list-style-type: none">• Number of e-scooters/e-bikes available• Number of neighborhood EVs available• Number of residents served• Number of rides• Average ride distance	Medium term (2030–2035)	\$	CARB Clean Mobility Options Voucher Pilot Program, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, CPUC statewide transportation electrification infrastructure rebate program, SCAQMD and MSRC Residential EV Charging Incentive Pilot Program, CARB Clean Fuel Reward and CAlLeVIP, CalCAP EV Charging Station Financing Program for small businesses, Federal Inflation Reduction Act EV tax credits and other financial incentives, CARB Greenhouse Gas Reduction Fund
T6.7	Increase the use of green hydrogen vehicles. Use biomethane and biogas created from organic waste as a "bridge fuel" to achieve 100% green hydrogen and electric vehicles. Consider the use of other zero-emission fuel sources.	ISD	PW		<ul style="list-style-type: none">• NG and hydrogen truck registration data (or fuel consumption data)• Quantity of biomethane and biogas sold and consumed in unincorporated Los Angeles County• Percent of the community truck fleet that uses green biomethane and hydrogen	Medium term (2030–2035)	\$\$\$	CARB Bus Replacement Grant, CARB Hybrid and Zero Emission Truck and Bus Voucher Incentive Project, Federal Zero-Emission Transit Bus Tax Exemption, CARB California Clean Mobility Options Voucher Pilot Program, SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant, SCAQMD Goods Movement Emission Reduction Program, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, CPUC statewide transportation electrification infrastructure rebate program
T7 ^a	Electrify County Fleet Vehicles: Electrify the County bus, shuttle, and light-duty vehicle fleets.			<p>Electrify the County bus and shuttle vehicle fleets by 2035.</p> <p>Increase the fleetwide percentage of light-duty vehicles in the County–owned fleet that are ZEVs to:</p> <ul style="list-style-type: none">• 35% by 2030• 60% by 2035• 100% by 2045 <p>Support the state’s goal that all new light-duty vehicle fleet purchases, with certain exceptions, will be ZEVs.</p>				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T7.1	Electrify the County bus and shuttle vehicle fleets and partner with transit agencies for group purchasing and siting of shared charging and/or fueling infrastructure. ^M	PW, LASD	ISD		<ul style="list-style-type: none">• Number of ZEV buses• Number of ZEV light-duty vehicles• Total ZEV percentage of bus and light-duty vehicle fleet	Short to medium term (2024–2035)	\$\$\$\$	Caltrans grant, CARB Bus Replacement Grant, CARB Hybrid and Zero Emission Truck and Bus Voucher Incentive Project, Federal Zero-Emission Transit Bus Tax Exemption, CARB California Clean Mobility Options Voucher Pilot Program, SCE Charge Ready Transit Bus Pilot and Charge Ready Transport, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, New EV Tax Credit, Commercial EV Tax Credit
T7.2	Electrify light-duty County fleet vehicles. ^M	ISD, LASD, Fire, PW, Parks	CSO		<ul style="list-style-type: none">• ZEV percentage of light-duty County-owned fleet	Short to medium term (2024–2035)	\$\$\$	CARB Clean Vehicle Rebate Project public fleet vehicle rebates, CARB Clean Cars for All program, Caltrans grants, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, New EV Tax Credit, Commercial EV Tax Credit
T8 ^a (Core)	Accelerate Freight Decarbonization: Incentivize and implement freight decarbonization technologies, specifically focusing on charging infrastructure.			<p>Increase the fleetwide percentage of medium- and heavy-duty vehicles in unincorporated Los Angeles County that are ZEVs to:</p> <ul style="list-style-type: none">• 40% by 2030• 60% by 2035• 90% by 2045 <p>Increase the fleetwide percentage of medium- and heavy-duty vehicles in the County-owned fleet that are ZEVs to:</p> <ul style="list-style-type: none">• 50% by 2030• 70% by 2035• 95% by 2045				
T8.1	Implement freight decarbonization technologies along highway corridors passing through unincorporated Los Angeles County communities through programs such as zero-emission delivery zones.	DRP, CSO	SCAQMD, CARB, SCAG, Metro, councils of governments, cities		<ul style="list-style-type: none">• Medium- and heavy-duty truck EVCSs• Miles between EVCSs• Sales and registrations of ZEV trucks• Percent of drayage truck fleet that is ZEV	Medium to long term (2030–2045)	\$\$\$\$	SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant, SCAQMD Goods Movement Emission Reduction Program, CEC CALeVIP EVSE Rebates, SCE Charge Ready Program EVSE rebates, CARB Advanced Technology Freight Demonstration Projects, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, CEC Clean Transportation Program, Federal New EV Tax Credit, Federal Commercial EV Tax Credit, Federal Inflation Reduction Act EV tax credits and other financial incentives

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T8.2	Create an ordinance requiring new goods movement facilities to install alternative fueling infrastructure.	DRP, CSO	PW, ISD		<ul style="list-style-type: none">Number and location of EVCS facilitiesTotal number of medium- and heavy-duty ZEVs registered and operating in unincorporated Los Angeles County	Short term (2024–2030)	\$	County General Fund, SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant, Goods Movement Emission Reduction Program, CEC CALeVIP EVSE Rebates, SCE Charge Ready Program EVSE rebates for implementation/compliance, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal EV Charging Tax Credit, Federal Inflation Reduction Act EV tax credits and other financial incentives
T8.3	Adopt Building Performance Standards for existing goods movement facilities and reach code requirements for major retrofits and renovations that require alternative fueling infrastructure for medium- and heavy-duty vehicles. Require goods movement facilities to install alternative fueling infrastructure for medium- and heavy-duty vehicles at the point of sale.	DRP, CSO	PW, ISD		<ul style="list-style-type: none">Number and location of EVCS facilitiesTotal number of medium- and heavy-duty ZEVs registered and operating in unincorporated Los Angeles County	Short term (2024–2030)	\$\$	County General Fund, SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant, Goods Movement Emission Reduction Program, CEC CALeVIP EVSE Rebates, SCE Charge Ready Program EVSE rebates for implementation/compliance, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal EV Charging Tax Credit, Federal Inflation Reduction Act EV tax credits and other financial incentives
T8.4	Streamline permitting of ZEV charging and fueling infrastructure for medium- and heavy-duty vehicles.	DRP	CSO, PW		<ul style="list-style-type: none">Number of permits completed	Short to medium term (2024–2035)	\$	County General Fund, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal EV Charging Tax Credit, Federal Inflation Reduction Act EV tax credits and other financial incentives
T8.5	Electrify the County medium- and heavy-duty vehicle fleet.	ISD, LASD, Fire, PW, Parks	CSO		<ul style="list-style-type: none">Number and percent of medium- and heavy-duty vehicles in the County-owned fleet that are ZEVs	Short to long term (2024–2045)	\$\$\$	CARB Clean Vehicle Rebate Project public fleet vehicle rebates, County General Fund, SCAQMD Heavy-Duty Zero Emission Vehicle Replacement Grant, Goods Movement Emission Reduction Program, CEC CALeVIP EVSE Rebates, CARB Low Carbon Transportation Investments and Air Quality Improvement Program, CEC Clean Transportation Program, CPUC statewide transportation electrification infrastructure rebate program, Federal New EV Tax Credit, Federal Commercial EV Tax Credit, Federal EV Charging Tax Credit, Federal Inflation Reduction Act EV tax credits and other financial incentives

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
T9 ^a	Expand Use of Zero-Emission Technologies for Off-Road Vehicles and Equipment: Phase out the use of gas- and diesel-powered small (≤25 horsepower) off-road equipment and increase the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment.			<p>Increase the fleetwide percentage of off-road fleet and equipment in unincorporated Los Angeles County that are ZEVs to:</p> <ul style="list-style-type: none">• 20% by 2030• 50% by 2035• 95% by 2045 <p>Increase the fleetwide percentage of construction, agriculture, and manufacturing equipment in unincorporated Los Angeles County that are ZEVs to:</p> <ul style="list-style-type: none">• 50% by 2030• 75% by 2035• 100% by 2045				
T9.1	Partner with the South Coast Air Quality Management District and Antelope Valley Air Quality Management District to increase the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment.	PW	DRP, CSO, ISD, SCAQMD, CARB		<ul style="list-style-type: none">• Off-road vehicle and equipment fleet count, type, and fuel type	Short term (2024–2030)	\$	CARB Clean Off-Road Equipment Voucher Incentive Project, SCAQMD Surplus Off-Road Opt-In for NOx (SOON) Program, Carl Moyer Program, CARB Low Carbon Transportation Investments and Air Quality Improvement Program
T9.2	Identify types of ZEV equipment and green hydrogen equipment that are commercially available (e.g., forklifts, loaders, welders, saws, pumps, fixed cranes, air compressors, sweepers, aerial lifts, pressure washers) and require the use of these types of equipment on all new projects through an ordinance or conditions of approval.	PW, DRP	CSO, ISD, SCAQMD, CARB		<ul style="list-style-type: none">• Development and adoption of ordinance• Off-road vehicle and equipment fleet count, type, and fuel type	Short term (2024–2030)	\$	CARB Clean Off-Road Equipment Voucher Incentive Project, SCAQMD Surplus Off-Road Opt-In for NOx (SOON) Program, Carl Moyer Program, CARB Low Carbon Transportation Investments and Air Quality Improvement Program
T9.3	Require, to the maximum extent feasible, the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment for County projects. ^M	PW	DRP, CSO, ISD, SCAQMD		<ul style="list-style-type: none">• Development and adoption of ordinance• Off-road vehicle and equipment fleet count, type, and fuel type	Short term (2024–2030)	\$\$	CARB Clean Off-Road Equipment Voucher Incentive Project, SCAQMD Surplus Off-Road Opt-In for NOx (SOON) Program, Carl Moyer Program, CARB Low Carbon Transportation Investments and Air Quality Improvement Program

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
Strategy 5: Decarbonize Buildings								
E1 ^a (Core)	Decarbonize Existing Buildings: As the carbon intensity of grid-supplied electricity decreases, decarbonization of the electrical grid must be combined with building decarbonization, shifting the energy load from fossil fuels to carbon-free energy sources while taking into consideration the varying climate, geography, infrastructure, and sole-source dependency challenges that rural communities and unique industries may face. This measure aims to decarbonize applicable existing buildings. A primary alternative to fossil natural gas is renewable electricity supplied by CPA. Biomethane is another alternative to fossil natural gas; however, existing opportunities for widespread use of biomethane are currently limited. The use of other zero-GHG-emission fuel sources for buildings will also be considered.			<p>Decarbonize the existing residential building stock:</p> <ul style="list-style-type: none">• 25% by 2030• 40% by 2035• 80% by 2045 <p>Decarbonize the existing nonresidential building stock:</p> <ul style="list-style-type: none">• 15% by 2030• 25% by 2035• 60% by 2045 <p>Require Zero Net Energy (ZNE) for all major renovations:</p> <ul style="list-style-type: none">• 50% by 2030• 75% by 2035• 100% by 2045 <p>Require major renovations to be electric-ready.</p> <p>Adopt building performance standards and reach code(s).</p> <p>Adopt ZNE ordinance.</p> <p>Conduct buildings portfolio analysis and cost feasibility study.</p>				
E1.1	Adopt Building Performance Standards for existing buildings and reach code requirements for major retrofits and renovations that require zero-GHG emission appliances.	CSO, PW	DRP		<ul style="list-style-type: none">• Energy consumption (gas use vs. electricity use vs. biomethane use)• Number of existing buildings transitioned to all-electric	Short to medium term (2024–2035)	\$	Funded; CPUC Technology and Equipment for Clean Heating (TECH) and Building Initiative for Low Emissions Development (BUILD) programs, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Federal Inflation Reduction Act
E1.2	Increase alternatives to fossil natural gas uses, such as for cooking, in existing buildings. Establish carbon and GHG intensity limits for existing nonresidential and residential buildings over a certain size.	CSO, DRP	PW, SoCalGas		<ul style="list-style-type: none">• Carbon intensity limits/reporting• Biomethane consumption	Short to medium term (2024–2035)	\$	CPUC TECH program, CPUC BUILD program, CARB Greenhouse Gas Reduction Fund, CARB California Climate Investments program, California Alternative Energy and Advanced Transportation Financing Authority, California Lending for Energy and Environmental Needs Center, Affordable Housing and Sustainable Communities Program, CPUC Energy Saving Assistance Program, CPA and CAlLeVIP rebates, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Federal Inflation Reduction Act

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
E1.3	Adopt a ZNE ordinance for building renovations, based on certain criteria (such as commercial facilities with 10,000 square feet of additions). Adopt ZNE Building Performance Standards for certain buildings not undergoing major renovations or retrofits.	CSO, DRP	PW, CSO, SCE, CPA		<ul style="list-style-type: none">Number of ZNE buildings constructed	Short term (2024–2030)	\$	County General Fund; CPUC TECH program, CPUC BUILD program, CARB Greenhouse Gas Reduction Fund, CARB California Climate Investments program, California Alternative Energy and Advanced Transportation Financing Authority, California Lending for Energy and Environmental Needs Center, Affordable Housing and Sustainable Communities Program, CPUC Energy Saving Assistance Program, CPA and CALeVIP rebates, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Federal Inflation Reduction Act
E1.4	Create a plan for phased electrification of County facilities. Phase out gas-powered infrastructure and appliances as they need replacement. ^M	ISD	PW, CSO, SCE, CPA		<ul style="list-style-type: none">Number of buildings electrifiedEnergy consumption (gas use vs. electricity use)	Short to long term (2024–2045)	\$\$–\$\$\$\$	CPUC TECH program, CPUC BUILD program, CARB Greenhouse Gas Reduction Fund, CARB California Climate Investments program, California Alternative Energy and Advanced Transportation Financing Authority, California Lending for Energy and Environmental Needs Center, Affordable Housing and Sustainable Communities Program, CPUC Energy Saving Assistance Program, CPA and CALeVIP rebates, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Federal Inflation Reduction Act
E1.5	Create a comprehensive fund aggregation program to support energy efficiency, decarbonization, and resilience in new and existing affordable housing.	CSO, DRP	DRP, SCE, CPA, RePowerLA Coalition, NRDC		<ul style="list-style-type: none">Number of units retrofittedNumber of units with renter protections as a result of incentives	Short to medium term (2024–2035)	\$\$\$	Federal Inflation Reduction Act
E1.6	Create and resource an energy retrofit accelerator to provide a one-stop shop for guidance, technical support, training, and access to aggregated funds to support building owners and contractors. Target support to low-income communities and affordable housing.	CSO, DRP	DRP, SCE, CPA, SoCalGas, RePowerLA Coalition, NRDC		<ul style="list-style-type: none">Number of owners servedNumber of retrofits implementedNumber of contractors trained	Short to medium term (2024–2035)	\$\$	Federal Inflation Reduction Act

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
E2 ^a	Decarbonize New Development: This measure aims to decarbonize all applicable new buildings, while taking into consideration the varying climate, geography, infrastructure, and sole-source dependency challenges that rural communities and unique industries may face.			<ul style="list-style-type: none">Require all applicable new buildings to be zero GHG emission. Provide affordable housing set-aside to offset first cost.<ul style="list-style-type: none">Residential: 90% zero GHG emission by 2030, 95% by 2035, and 100% by 2045Nonresidential: 90% zero GHG emission by 2030 (except large industry and possibly food service) 95% by 2035, and 100% by 2045Require most new residential and nonresidential buildings to be ZNE beginning in 2030. Include affordable housing set-aside.<ul style="list-style-type: none">Residential: 90% ZNE by 2030Nonresidential: 90% ZNE by 2030 (except large industry) <p>Require all new development to be electric-ready.</p>				
E2.1	Adopt an ordinance requiring all applicable new buildings to be zero-GHG emission. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability. Require all new development to be electric-ready.	PW, DRP	CSO, WDACS		<ul style="list-style-type: none">Number of zero GHG emission buildings builtTotal electricity and natural gas consumption	Short term (2024–2030)	\$	County General Fund, Home Electrification and Energy Efficiency Rebates, Efficient Building Adoption Grants
E2.2	Adopt a ZNE ordinance for all new residential buildings built after 2025 and all new nonresidential buildings built after 2030. Include renter protections for affordable housing. Provide affordable housing set-aside to offset first cost.	PW, DRP	CSO		<ul style="list-style-type: none">Number of residential and nonresidential buildings constructed to be ZNE	Short term (2024–2030)	\$	County General Fund, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Commercial Energy Efficiency Tax Deduction
E2.3	Adopt CALGreen Code Tier 1 green building standards and identify which Tier 2 standards could be adopted as code amendments.	PW	CSO, DRP		<ul style="list-style-type: none">Number of voluntary CALGreen Tier 2 standards adopted as code amendments	Short term (2024–2030); ongoing with CALGreen updates)	\$	New funds needed
E3	Other Decarbonization Actions: Reduce the life-cycle carbon intensity of building materials and phase out the use of high-GWP refrigerants.			<p>Increase the proportion of biomethane in the utility natural gas mix to:</p> <ul style="list-style-type: none">20% by 203030% by 203580% by 2045 <p>Use low-carbon, carbon-neutral, or negative-carbon concrete for all new construction; identify carbon intensity limit of concrete.</p> <p>Replace high-GWP refrigerants with low-GWP refrigerants:</p> <ul style="list-style-type: none">15% by 203025% by 203550% by 2045				
E3.1	Work with utilities to incorporate increasing levels of biomethane into the natural gas mix.	CSO, DRP	PW, SoCalGas, LACSD, CalRecycle		<ul style="list-style-type: none">Proportion of biomethane in utility natural gas mix	Short to medium term (2024–2035); develop ordinance to be in effect by 2030	\$\$\$ (TBD based on cost of biomethane)	TBD

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
E3.2	Adopt a concrete code for new construction that limits embodied carbon emissions; specify code requirements of carbon intensity limit for concrete.	PW	CSO, DRP		<ul style="list-style-type: none">Quantity of low-carbon concrete used in new construction	Short to medium term (2025–2035)	\$	TBD
E3.3	Adopt reach code requirements that include performance standards to limit the amount of embodied carbon associated with construction.	CSO	DRP, PW		<ul style="list-style-type: none">Quantity of low-carbon materials used in new construction	Short term (2024–2030)	\$	TBD
E3.4	Develop a refrigerant management program that establishes a phase-out timeline for high-GWP refrigerants in existing buildings, incentivizes industrial equipment replacement, and specifies requirements for new development to use low-GWP refrigerants.	ISD	DRP, U.S. EPA, CARB		<ul style="list-style-type: none">Quantity of low-GWP refrigerants charged/used	Short term (2024–2030)	\$	TBD
Strategy 6: Improve Efficiency of Existing Building Energy Use								
E4 ^a	Improve Energy Efficiency of Existing Buildings: Retrofit existing building stock to reduce overall unincorporated Los Angeles County energy use.			<p>Reduce building energy use intensity below 2015 levels as follows:</p> <ul style="list-style-type: none">20% for residential, 15% for industrial, and 25% for commercial by 203025% for residential and industrial and 35% for commercial by 203550% for residential, industrial, and commercial by 2045 <p>Adopt building performance standards and reach code(s).</p>	<ul style="list-style-type: none">			
E4.1	Adopt Building Performance Standards for energy efficiency in existing buildings. Expand and enhance the energy efficiency programs offered by the Southern California Regional Energy Network (SoCalREN). Include affordable housing considerations in these requirements and develop additional renter protections and supporting measures (financial support, technical assistance, or other incentives) to limit the amount of first costs being passed on to low-income renters. (See Actions E1.5 and E1.6.)	ISD, CSO	SoCalREN, SCE, SoCalGas, CPA		<ul style="list-style-type: none">Overall energy savingsNumber of homes or businesses participating	Short to medium term (2024–2035)	\$\$\$	New funds needed; GoGreen Business Energy Financing program, SoCalREN, SCE On-Bill Financing, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Commercial Energy Efficiency Tax Deduction, Residential Energy Efficiency Tax Credit, Affordable Housing Resilience and Efficiency Investments
E4.2	Adopt an energy efficiency ordinance for existing buildings, requiring all buildings over 20,000 square feet to benchmark and report their energy use and demonstrate their pathway to efficiency.	CSO	PW, DRP, SCE, SoCalGas, CPA		<ul style="list-style-type: none">Energy use, electricity and gas (Btu)Building size (square footage)	Short term (2024–2030)	\$	County General Fund, Home Electrification and Energy Efficiency Rebates, Efficient Building Code Adoption Grants, Commercial Energy Efficiency Tax Deduction, Residential Energy Efficiency Tax Credit, Affordable Housing Resilience and Efficiency Investments
E4.3	Convert existing County–owned heat-trapping surfaces to cool or green surfaces. ^M	ISD	CSO, PW		<ul style="list-style-type: none">Number and area of cool and green roofs installed	Medium term (2030–2035)	\$\$–\$\$\$	Project-based funding

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
Strategy 7: Conserve Water								
E5	Increase Use of Recycled Water and Graywater Systems: Increasing the use of alternative water sources (e.g., recycled water, graywater, indirect potable reuse) reduces the demand for water sources with higher energy and carbon intensities (e.g., imported water, groundwater).			<p>Increase use of alternative water sources such that Unincorporated Los Angeles County demand is met by recycled water, graywater, or potable reuse:</p> <ul style="list-style-type: none">• 25% by 2030• 50% by 2035• 90% by 2045 <p>Ensure that water demand for agricultural will be recycled or graywater:</p> <ul style="list-style-type: none">• 30% by 2030• 50% by 2035• 80% by 2045 <p>Ensure that water demand for industrial will be recycled or graywater:</p> <ul style="list-style-type: none">• 30% by 2030• 50% by 2035• 80% by 2045 <p>Implement a successful direct potable reuse project by 2025.</p>				
E5.1	Require dual waste piping to be installed in new residential developments to allow for future graywater irrigation systems.	PW	DPH		<ul style="list-style-type: none">• Number of graywater systems installed	Long term (2035–2045)	\$	California Department of Water Resources grants; partial funds secured; additional funds needed
E5.2	Require the use of recycled water and graywater for agricultural purposes where recycled water is available. Identify soil and water conservation best practices for agricultural uses. Work with Los Angeles County Sanitation Districts (LACSD) and other water suppliers to assess the feasibility of new recycled water facilities for unserved communities.	PW	DRP, DPH, LACSD, MWD		<ul style="list-style-type: none">• Recycled/graywater supply for agricultural purposes	Short to long term (2024–2045)	\$\$–\$\$\$	New funds needed
E5.3	Require the use of recycled water and graywater for industrial purposes where recycled water is available. Identify water conservation best practices for industrial uses. Work with LACSD and other water suppliers to assess the feasibility of new recycled water facilities for unserved communities.	PW	DRP, DPH, LACSD, MWD		<ul style="list-style-type: none">• Recycled/graywater supply for industrial purposes	Short to long term (2024–2045)	\$\$–\$\$\$	TBD
E5.4	Require the use of recycled water and graywater for landscaping irrigation purposes where recycled water is available.	PW	DRP, DPH, LACSD, MWD		<ul style="list-style-type: none">• Recycled/graywater supply for landscape irrigation	Short to long term (2024–2045)	\$\$–\$\$\$	TBD
E5.5	Partner with the County water districts and retail suppliers to explore the potential for widespread utilization of direct potable reuse through pilot projects.	PW, CSO	County water districts, MWD		<ul style="list-style-type: none">• Direct potable reuse output volume	Short term (2024–2030)	\$	TBD

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
E6 ^a	Reduce Indoor and Outdoor Water Consumption: Reducing indoor and outdoor water consumption is essential as the state experiences longer and more severe droughts. Not only will water conservation improve regional resiliency, but it will also reduce GHG emissions through the reduction of energy consumption associated with the processing, treatment, and conveyance of water and wastewater.			Reduce total water use to less than: <ul style="list-style-type: none">• 110 GPCD by 2030• 100 GPCD by 2035• 85 GPCD by 2045 Reduce outdoor landscaping water use by 10% by 2030, 20% by 2035, and 50% by 2045. Reduce municipal water consumption by 10% by 2030, 20% by 2035, and 50% by 2045.				
E6.1	Develop a water conservation ordinance for new development (public and private). Utilize Leadership in Energy and Environmental Design (LEED) or Sustainable SITES Initiative (SITES) standards. A future ordinance may include a net-zero water requirement for new greenfield development.	CSO	DRP, PW		<ul style="list-style-type: none">• Total water use• Water use per capita• Square footage of each type of development (residential, commercial, municipal) built water-neutral• Building size (square footage)	Short term (2024-2030)	\$	New funds needed
E6.2	Adopt a water efficiency ordinance for existing buildings, requiring all buildings over 20,000 square feet to benchmark and report their water use and demonstrate their pathway to efficiency.	PW, CSO	DRP		<ul style="list-style-type: none">• Total water use• Water use per capita• Building size (square footage)	Short to medium term (2024–2035)	\$	County General Fund
E6.3	Incentivize residents to replace water-intensive landscaping, such as decorative turf, with water-conserving landscaping and/or California native plants through a new ordinance along with education and incentive programs.	PW	CSO, DRP, water districts		<ul style="list-style-type: none">• Water use for landscaping	Short term (2024–2030)	\$	County General Fund
E6.4	Implement strategies to improve water efficiency and increase water conservation at County facilities. ^m	PW, ISD, Parks	CSO, DRP		<ul style="list-style-type: none">• Total water use• Water use for landscaping• Indoor water use	Short term (2024–2030)	\$\$	Project-based funding
E6.5	Integrate water-related programs into the County’s affordable housing preservation program to protect the housing affordability of units and to keep the units fit for their purpose in a changing climate.	PW, DRP	CSO		<ul style="list-style-type: none">• Total water use• Water use for landscaping• Indoor water use	Short to medium term (2024–2035)	\$	Water agency funding and grant programs
Strategy 8: Minimize Waste and Recover Energy and Materials from the Waste Stream								
W1 ^a (Core)	Institutionalize Sustainable Waste Systems and Practices: Undertake actions that result in sustainable waste systems. Responsible and sustainable waste practices are learned behaviors that the County can facilitate through outreach, education, and mandates. Increase diversion of recyclable materials and organics from landfills through ordinances, service improvements, education and outreach, and promotion of product stewardship and markets for material reuse. An increased diversion rate indirectly reduces the demand for virgin materials, which reduces the life-cycle carbon intensity of any resulting products. Through action taken at the County level, waste-conscious habits and thoughtful consumption can become the default.			Increase the total unincorporated Los Angeles County waste diversion rate to: <ul style="list-style-type: none">• 85% by 2030• 90% by 2035• 95% by 2045 Reduce the disposal of single-use plastics in landfills. Increase the Construction and Demolition Debris Ordinance to 70% diversion. Increase percentage of construction and demolition debris reused in new projects (private, public).				

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
W1.1	Identify best practice waste pricing programs to reduce waste generation to the maximum extent feasible, including but not limited to differential prices for waste based on amount generated in the residential sector and reforms to tipping rate structures.	CSO, PW	LACSD, DPH		<ul style="list-style-type: none">Per capita landfill disposalCounty unincorporated area diversion rate	Short term (2024–2030)	\$\$	Funded; CalRecycle grants, CEC grants, USDA Water & Waste Disposal Loan & Grant Program
W1.2	Implement, enforce, and expand to the maximum extent feasible the single-use plastics and expanded polystyrene ordinance.	CSO, PW	DPH		<ul style="list-style-type: none">Estimated source reduction of single-use plastics and polystyreneCounty unincorporated area waste generation and diversion rates	Short to long term (2024–2045) Short to long term (2024–2045)	\$–\$\$	Funded; CalRecycle grants, CEC grants, USDA Water & Waste Disposal Loan & Grant Program
W1.3	Increase the diversion requirements in the County’s Construction and Demolition Debris Ordinance and allow the use of recycled construction materials in new projects.	PW	CSO, DRP, LACSD, CalRecycle		<ul style="list-style-type: none">C&D tonnage recycled/diverted from landfillC&D tonnage reused	Short term (2024–2030)	\$	Funded; CalRecycle grants, CEC grants, USDA Water & Waste Disposal Loan & Grant Program
W2	Increase Organic Waste Diversion: Provide services for diverting yard waste, food scraps, and compostable paper from landfills to beneficial uses, including compost, food rescue, and energy production.			Maximize organic waste diversion to support unincorporated Los Angeles County’s overall waste diversion rate goals identified in Measure W1.				
W2.1	Require organic waste generators to properly manage organic waste as per the Organic Waste Disposal Reduction Ordinance. Improve upon and expand existing practices and programs to minimize organic waste disposal in landfills.	PW, Agricultural Commissioner/Weights and Measures	CSO, LACSD, CalRecycle		<ul style="list-style-type: none">Per capita organic waste disposal or total organic waste disposedTotal Countywide diversion rate	Short to long term (2024–2045) Short to long term (2024–2045)	\$–\$\$	Funded
W2.2	Develop organic waste collection, management, and diversion programs for constituents in unincorporated communities and all County operations; establish a contamination monitoring plan for organic waste programs.	PW	Waste collectors, CalRecycle		<ul style="list-style-type: none">Organic waste (tons or pounds per capita) disposal tonnage	Short term (2024–2030)	\$\$\$	New funds needed; Grants from CalRecycle, CEC, CDFA, USDA
W2.3	Collaborate with the Los Angeles County Sanitation Districts and other waste and wastewater service providers to utilize unused anaerobic digestion capacity of existing wastewater treatment plants and solid waste facilities to generate vehicle fuel and other beneficial uses (electricity and/or biomethane) from newly diverted organic waste. Develop a strategy for using bioenergy created from recycled organic waste.	PW	CSO, LACSD, CalRecycle		<ul style="list-style-type: none">Total energy generation or renewable vehicle fuel created from organic waste	Short to medium term (2024–2035)	\$\$\$\$	New funds needed; Grants from CalRecycle, CEC, CDFA, USDA
W2.4	Provide regional leadership for organic waste processing capacity planning and infrastructure development.	PW	LACSD, CalRecycle		<ul style="list-style-type: none">Capacity of organic waste processing facilitiesAmount of organic waste processed	Medium to long term (2030–2045)	\$\$\$\$	Funded
W2.5	Enhance and expand the County’s existing Food DROP food donation and redistribution program to divert edible food from landfills and make it available to food insecure communities.	PW	DPH, local businesses, restaurants, grocery stores, and nonprofits		<ul style="list-style-type: none">Total tons of edible food donated to food recovery organizations	Short to medium term (2024–2035)	\$\$	USDA Supplemental Nutrition Assistance Program-Education; grants from CalRecycle, CEC, CDFA, and USDA

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
Strategy 9: Conserve and Connect Wildlands and Working Lands								
A1 ^a	Conserve Forests, Woodlands, Shrublands, Grasslands, Desert, and other Carbon-Sequestering Wildlands and Working Lands: Preserve, conserve, and restore agricultural lands, working lands, rangelands, forest lands, wetlands, and other wildlands in unincorporated Los Angeles County.			<p>Reduce the amount of natural land converted for urbanized uses:</p> <ul style="list-style-type: none">• 25% by 2030 (53 hectares conserved annually)• 50% by 2035 (106 hectares conserved annually)• 75% by 2045 (159 hectares conserved annually) <p>Conserve and restore new acres of wildland:</p> <ul style="list-style-type: none">• 2,000 acres by 2030• 4,000 acres by 2035• 6,000 acres by 2045 <p>Manage new acres of wildland for wildfire risk reduction and carbon stock savings:</p> <ul style="list-style-type: none">• 10,000 acres by 2030• 20,000 acres by 2035• 50,000 acres by 2045				
A1.1	Develop an open space conservation and land acquisition strategy that prioritizes wildlife connectivity to conserve native habitats for carbon sequestration.	DRP	CSO, Parks, DOC, Fire		<ul style="list-style-type: none">• Total acres of natural habitats conserved• Easements established; percentage of easements within climate-hazard areas or SEAs	Short to long term (2024–2045)	\$–\$\$\$	County General Fund
A1.2	Employ ecosystem-appropriate vegetation management of wildlands based on the best available science to reduce unintended human ignitions and wildfire risk and prevent carbon loss in forest lands. Leverage tools such as the Unified Land Management Plan and the Countywide Community Wildfire Prevention Plan.	Agricultural Commissioner/Weights and Measures, Fire	DRP, CSO, Parks, DOC		<ul style="list-style-type: none">• Acres of wildlands managed for wildfire risk reduction and carbon stock savings	Short to long term (2024–2045)	\$–\$\$\$	Grants through CAL FIRE
Strategy 10: Sequester Carbon and Implement Sustainable Agriculture								
A2	Support Regenerative Agriculture: Promote agricultural practices that sequester carbon and restore soil quality, biodiversity, ecosystems health, and water quality.			<ul style="list-style-type: none">• Reduce the quantity of synthetic fertilizers used/applied.• Increase the number of acres of cover crops using regenerative agricultural techniques.				
A2.1	Create fallow and field resting incentives to reduce bare-fallow land by adding cover crops and promoting crop rotation for active agricultural sites to improve soil quality and limit risks of nutrient erosion, pollutant runoff, and yield reduction. Create a carbon farming plan with the primary objectives of carbon removal and regenerative agriculture.	Agricultural Commissioner/Weights and Measures	CSO, ISD		<ul style="list-style-type: none">• Acres of bare-fallow land• Acres of land using regenerative agricultural techniques	Medium term (2030–2035)	\$–\$\$\$\$	TBD

ID	STRATEGY/MEASURE/ACTION	LEAD	PARTNERS	PERFORMANCE OBJECTIVES	TRACKING METRICS	TIME FRAME	COST	FUNDING
A2.2	Provide compost and/or organic or nonsynthetic fertilizer to farmers free of charge or at a discounted rate.	Agricultural Commissioner/Weights and Measures	CSO, LACSD		<ul style="list-style-type: none">Tonnage of compost and/or non-synthetic fertilizer provided to those producing cropsQuantity of synthetic fertilizers used/appliedNumber of acres of cover crops using regenerative agricultural techniques	Short term (2024–2030)	\$\$\$	TBD
A3 ^a	Expand Unincorporated Los Angeles County’s Tree Canopy and Green Spaces: Create an Urban Forest Management Plan to plant trees, increase unincorporated Los Angeles County’s tree canopy cover, add green space, and convert impervious surfaces. Focus tree planting on frontline communities with insufficient tree cover and green spaces.			Plant new trees as follows:* <ul style="list-style-type: none">130,000 trees by 2030200,000 trees by 2035270,000 trees by 2045 Develop an Urban Forest Management Plan. <i>* The performance objectives provided here serve as a general metric and may be refined upon completion of the Urban Forest Management Plan.</i>				
A3.1	Create and implement an equitable Urban Forest Management Plan that prioritizes: (1) tree- and parks-poor communities; (2) climate- and watershed-appropriate and drought/pest-resistant vegetation; (3) appropriate watering, maintenance, and disposal practices; (4) provision of shade; and (5) biodiversity.	CSO	DRP, PW, Parks, Agricultural Commissioner/Weights and Measures, DPH, Beaches and Harbors, LASD, Fire, CAL FIRE, ISD		<ul style="list-style-type: none">Tree countTree canopy coverGreen space areaArea of impervious surface convertedNeighborhood selection criteria	Short to long term (2024–2045)	\$\$	New funds needed; CAL FIRE Urban and Community Forestry Grant
A3.2	Expand tree planting on County property and in the public right-of-way within unincorporated Los Angeles County. Encourage tree planting on private property.	CSO	DRP, PW, Parks, DPH, Beaches and Harbors, LASD, Fire, CAL FIRE, ISD		<ul style="list-style-type: none">Number of trees plantedAcres of tree canopy cover	Short to long term (2024–2045)	\$\$	New funds needed; CAL FIRE Urban and Community Forestry Grant
A3.3	Develop an ordinance requiring that all removed native trees be replaced by an equal or greater number of new trees.	CSO	DRP, PW, Parks		<ul style="list-style-type: none">Number of trees planted/replaced	Short term (2024–2030)	\$	TBD

Abbreviations: AB = Assembly Bill; Beaches and Harbors = Los Angeles County Department of Beaches & Harbors; Btu = British thermal units; BUILD = Building Initiative for Low Emissions Development; CAL FIRE = California Department of Forestry and Fire Protection; CalCAP = California Capital Access Program; CALeVIP = California Electric Vehicle Infrastructure Project; CALGreen = California Green Building Standards; CalRecycle = California Department of Resources Recycling and Recovery; Caltrans = California Department of Transportation; CARB = California Air Resources Board; CCS = capture and carbon and sequestration; CDFA = California Department of Food and Agriculture; CEC = California Energy Commission; CIFIA = Carbon Dioxide Transportation Infrastructure Finance and Innovation; County = County of Los Angeles government; CPA = Clean Power Alliance; CPUC = California Public Utilities Commission; CSO = Chief Sustainability Office; DOC = California Department of Conservation; DOE = U.S. Department of Energy; DPH = Department of Public Health; DRP = Department of Regional Planning; DU = dwelling unit; EV = electric vehicle; EVCS = electric vehicle charging station; EVSE = electric vehicle supply equipment; Fire = Los Angeles County Fire Department; Food DROP = Food Donation & Recovery Outreach Program; GHG = greenhouse gas; GPCD = gallons per capita per day; GWP = global warming potential; HQTA = high quality transit area; ISD = Internal Services Department; kBtu = thousand British thermal units; kW = kilowatts; LA100 = The Los Angeles 100% Renewable Energy Study; LACDA = Los Angeles County Development Authority; LACSD = Los Angeles County Sanitation Districts; LASD = Los Angeles County Sheriff’s Department; LEAP = Local Early Action Planning; LEED = Leadership in Energy and Environmental Design; Metro = Los Angeles County Metropolitan Transportation Authority; MSRC = Mobile Source Air Pollution Reduction Review Committee; MW = megawatts; MWD = Metropolitan Water District of Southern California; MWh = megawatt-hours; NG = natural gas; NOx = oxides of nitrogen; NRDC = Natural Resources Defense Council; Parks = Los Angeles County Department of Parks and Recreation; PV = photovoltaic; PW = Department of Public Works; SASH = Single-Family Affordable Solar Homes; SB = Senate Bill; SCAG = Southern California Association of Governments; SCAQMD = South Coast Air Quality Management District; SCE = Southern California Edison; SEA = Significant Ecological Area; SoCalGas = Southern California Gas Company; SoCalRen = Southern California Regional Energy Network; SOON = Surplus Off-Road Opt-In for NOx; TBD = to be determined; TDM = transportation demand management; TECH = Technology and Equipment for Clean Heating; TIP = Transportation Improvement Program; U.S. EPA = U.S. Environmental Protection Agency; USDA = U.S. Department of Agriculture; VMT = vehicle miles traveled; WDACS = County Workforce Development, Aging and Community Services; ZEV = zero-emission vehicle

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APPENDIX F

2045 Climate Action Plan CEQA Streamlining Checklist

Purpose

The 2045 Climate Action Plan CEQA Streamlining Checklist (referred to herein as the “2045 CAP CEQA Streamlining Checklist”) can be used to provide a voluntary streamlined review process for analyzing the impacts of GHG emissions resulting from proposed discretionary projects that are subject to CEQA.

The 2045 CAP CEQA Streamlining Checklist may be updated administratively to incorporate new GHG emissions reduction techniques or to comply with later amendments to the 2045 CAP or local, state, or federal law.

Appendix F Organization

This appendix is organized into the following four sections:

Section F.1: Background

This section describes the rationale for the checklist and explains how it provides the mechanism for projects that wish to streamline environmental review of their GHG impacts using the 2045 CAP’s PEIR pursuant to CEQA Guidelines Section 15183.5(b).

Section F.2: Checklist Instructions

This section includes the submittal requirements for applicants, the applicability of the 2045 CAP CEQA Streamlining Checklist, and instructions for completing the 2045 CAP CEQA Streamlining Checklist.

Section F.3: 2045 CAP CEQA Streamlining Checklist

This section includes the 2045 CAP CEQA Streamlining Checklist itself along with a table for reporting and documenting alternative project emissions reduction measures and additional GHG reductions.

Section F.4: Offsite GHG Reduction Program Framework

This section includes a framework for the County's forthcoming Offsite GHG Reduction Program. This program will be available for project applicants to use as an alternative GHG reduction measure to the CEQA streamlining requirements, by allowing applicants to fund or implement local projects that reduce GHG emissions within unincorporated Los Angeles County.

F.1 Background

2045 CAP CEQA Streamlining Checklist

The growth projections outlined in the General Plan's Land Use and Housing Elements were used in the 2045 CAP to estimate unincorporated Los Angeles County's future emissions. Therefore, projects can use the 2045 CAP CEQA Streamlining Checklist if they are consistent with the Land Use Element. This consistency allows a project to streamline its analysis of GHG impacts by using the existing programmatic environmental review contained in the certified Final PEIR for the 2045 CAP. In doing so, pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to climate change resulting from the project's GHG emissions may be determined not to be cumulatively considerable. This approach is consistent with the recommendations of the California Air Resources Board (CARB) in the 2022 *Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) that "CEQA-qualified CAPs" can allow eligible projects to streamline their determination of significance for GHG emissions.¹ It is also consistent with the Association of Environmental Professionals Climate Change Committee's best practices for tiering from qualified GHG reduction plans that demonstrate substantial progress toward meeting the next milestone statewide planning reduction target (i.e., a 40 percent reduction below 1990 levels by 2030 as set forth by SB 32).²

This 2045 CAP CEQA Streamlining Checklist provides a mechanism for projects to specifically identify "those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project" per Section 15183.5(b)(2) of the CEQA Guidelines.

GHG emissions associated with the construction of projects, including demolition and decommissioning activities, are generally orders of magnitude lower than operational GHG emissions. This is primarily because construction emissions are typically short in duration compared to the project's overall lifetime. Typically, construction GHG emissions are amortized over 30 years and added to a project's 30-year lifetime emissions total; after this amortization, construction GHG emissions usually represent a small fraction of a project's total annual

¹ California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, "Local Actions." November 16, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf>. Accessed in January 2023.

² Association of Environmental Professionals. 2016. *Final White Paper Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. October 18, 2016. Available: https://califaep.org/docs/AEP-2016_Final_White_Paper.pdf.

emissions. It is generally difficult to enforce low-emission construction equipment because of the limited availability of zero-emission and near-zero-emission construction equipment, along with contracting requirements. In addition, the 2045 CAP quantifies GHG emissions from off-road construction activity at the unincorporated Los Angeles County level; these emissions are accounted for in the 2045 CAP's ability to achieve the 2030, 2035, and 2045 targets.

The 2045 CAP CEQA Streamlining Checklist also requires the use of electric and zero-emission construction equipment during project construction to the maximum extent feasible, to align with Measure T9. Therefore, construction emissions can be assessed qualitatively as part of related CEQA GHG emissions analysis. However, some projects may have long construction periods or entail substantial excavation and grading that could result in construction-related GHG emissions that may be considered significant. Thus, the County retains the discretion on a project-by-project basis to consider whether a project's construction-related GHG emissions could be cumulatively considerable and require a more detailed quantitative CEQA analysis and mitigation of GHG emissions.

Projects that elect not to use the 2045 CAP CEQA Streamlining Checklist for CEQA streamlining must prepare a comprehensive project-specific analysis of GHG emissions. The analysis must quantify existing and projected GHG emissions and it is strongly encouraged that the project incorporate all CEQA streamlining requirements in this 2045 CAP CEQA Streamlining Checklist, although this is not required. The 2045 CAP CEQA Streamlining Checklist may be updated to incorporate new GHG emissions reduction techniques or to comply with later amendments to the 2045 CAP or to local, state, or federal law.

2045 CAP Appendix B, *Emissions Forecasting and Reduction Methods*, provides the quantitative basis for CEQA streamlining requirements. This document demonstrates how, based on substantial evidence,³ implementing these CEQA streamlining requirements on a project-by-project basis will collectively achieve the 2045 CAP's target emissions level for projects by 2030 and 2035, as required by CEQA Guidelines Section 15183.5(b)(1)(D).

Alignment with the 2022 Scoping Plan

Appendix D of CARB's 2022 Scoping Plan provides guidance for local governments and lead agencies for how local climate action planning can support the State of California's climate goals.⁴ CARB reiterates that a CAP that has been adopted through the CEQA review process and meets the criteria specified in CEQA Guidelines Section 15183.5(b) for a "plan for the reduction of greenhouse gas emissions"—such as the 2045 CAP—is a "CEQA-qualified CAP" that can allow eligible projects to streamline their determination of significance for GHG emissions.

³ CEQA Guidelines Section 15384 defines *substantial evidence* as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on the environment is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence. Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts."

⁴ California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, "Local Actions." November 16, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf>. Accessed in January 2023.

Streamlining CEQA GHG analysis for future projects by demonstrating consistency with a CAP involves evaluating whether a project demonstrates consistency with “all applicable GHG reduction measures identified in the CAP.” CARB notes that such consistency can be determined by using CAP compliance checklists, which can be “included as part of the proposed project’s CEQA analysis documenting the project’s consistency with the CEQA-qualified CAP.”

The 2045 CAP CEQA Streamlining Checklist is therefore consistent with CARB’s guidance in the 2022 Scoping Plan as a valid way for discretionary projects to streamline their analysis of GHG impacts.

Recommended Project Attributes for Residential and Mixed-Use Projects

Appendix D of the 2022 Scoping Plan includes a list of “key project attributes” for residential and mixed-use projects. CARB states that if a project incorporates these attributes, the project would “accommodate growth in a manner consistent with State GHG reduction and equity prioritization goals” and would be “**clearly** consistent with the State’s climate goals.” Further, such projects would be “consistent with the Scoping Plan or other plans, policies, or regulations adopted for the purposes of reducing GHGs” and that therefore, “the GHG emissions associated with such projects may result in a less-than-significant GHG impact under CEQA.”

Alternative Project Emissions Reduction Measures and Offsite GHG Reduction Programs

As discussed below under *Step 4: Identify Alternative Project Emissions Reduction Measures and Additional GHG Reductions*, project applicants may employ alternative GHG emissions reduction measures to serve as replacements for any CEQA streamlining requirement not feasible to implement at the project-level. Such replacement measures must meet specific criteria and be supported by substantial evidence that the measure would achieve the same or greater level of GHG emissions reductions as the CEQA streamlining requirement that it replaces.

CARB supports the idea of “off-site GHG mitigation” in Appendix D of the 2022 Scoping Plan for projects that have maxed out their on-site GHG reduction actions: “If implementation of all feasible on-site GHG reduction measures is insufficient to reduce a project’s impact to a less-than-significant level, the State recommends that the lead agency next explore options to fund or implement **local**, off-site direct GHG reduction strategies.”⁵

As discussed further below, Action ES5.4 of the 2045 CAP would establish an Offsite GHG Reduction Program for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment.

CARB cautions that such off-site measures must directly “offset” a project’s GHG emissions and must not be unrelated off-site measures that would occur independently of the proposed project. Lead agencies and project applicants must provide substantial evidence that a specific off-site mitigation measure is not otherwise required by law or regulation and would not have

⁵ California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, “Local Actions.” November 16, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf>. Accessed in January 2023.

occurred “**but for** the requirement to mitigate a project’s GHG impacts.” CARB goes on to state the following:

There has been concern that GHG emission reductions from off-site GHG mitigation measures... may double count GHG emission reductions from California’s Cap-and-Trade program. However, off-site mitigation measures, such as EV [electric vehicle] charging or building efficiency retrofits, are viable options for mitigation under CEQA and would not be double counted, provided they are not otherwise required by law or regulation and would not have happened but for the mitigation requirements of the project. If the mitigation would have been implemented or required through another statute, regulation, existing local program, or requirement other than the project it is mitigating, then the project being mitigated may not also claim credit for the reductions.

F.2 Checklist Instructions

2045 CAP CEQA Streamlining Checklist Submittal Requirements

The 2045 CAP CEQA Streamlining Checklist shall accompany the project application for all projects and plans proposed within unincorporated Los Angeles County’s land use authority that are subject to CEQA. The 2045 CAP CEQA Streamlining Checklist is designed to assist in identifying the GHG emissions reduction actions and other applicable sustainability-focused requirements specific to a proposed project. However, it may be necessary to supplement the completed 2045 CAP CEQA Streamlining Checklist with supporting materials, calculations, or certifications to demonstrate compliance with all the applicable CEQA streamlining requirements in the 2045 CAP CEQA Streamlining Checklist. The 2045 CAP CEQA Streamlining Checklist shall be included in the respective project conditions of approval.

2045 CAP CEQA Streamlining Checklist Applicability

The 2045 CAP CEQA Streamlining Checklist allows for streamlined project-specific CEQA GHG analysis. The 2045 CAP CEQA Streamlining Checklist is only required if a project applicant wants to use CEQA streamlining for GHG impacts; it is not required if a project-level environmental analysis of GHG impacts is conducted. As such, the 2045 CAP CEQA Streamlining Checklist is voluntary. The 2045 CAP CEQA Streamlining Checklist cannot be used for projects requiring a General Plan amendment associated with land use density increases. Ministerial projects and projects that otherwise are exempt from CEQA are deemed to be consistent with the 2045 CAP, and no further review is necessary, with the exception of the residential infill categorical exemption (CEQA Guidelines Section 15195), for which projects are required to demonstrate consistency with the 2045 CAP through the 2045 CAP CEQA Streamlining Checklist if the applicant elects to use CEQA streamlining for GHG impacts. All projects using the 2045 CAP CEQA Streamlining Checklist for CEQA streamlining must demonstrate consistency with the General Plan growth projections. **If a project is not consistent with the General Plan growth projections, then the 2045 CAP CEQA Streamlining Checklist may not be used for CEQA streamlining.**

2045 CAP CEQA Streamlining Checklist Instructions

Project applicants shall complete the following **four steps** to demonstrate compliance with the 2045 CAP for a proposed project.

Step 1. Demonstrate consistency with the General Plan growth projections (**Table F-1**).

Step 2. Determine whether the project screens out of certain CEQA streamlining requirements (**Table F-1**).

Step 3. Complete the 2045 CAP CEQA Streamlining Checklist (**Table F-1**).

Step 4. Identify alternative project emissions reduction measures and additional GHG reductions (**Table F-2**), as needed.

All projects must complete **Step 1: Demonstrate Consistency with the General Plan Growth Projections** and **Step 2: Determine Whether the Project Screens Out of Certain CEQA Streamlining Requirements**. Projects that do not meet the screening criteria must complete **Step 3: Complete the 2045 CAP CEQA Streamlining Requirements**. Projects that cannot meet all CEQA streamlining requirements shown in Table F-1 must also complete **Step 4: Identify Alternative Project Emissions Reduction Measures and Additional GHG Reductions** (Table F-2) to describe alternative GHG emissions reduction measures that serve as replacements to any CEQA streamlining requirements not met by the project.

The following process, illustrated in **Figure F-1**, explains how to demonstrate consistency of a project with the 2045 CAP's GHG emissions reduction measures and actions, and thereby streamline the project's GHG impacts analysis by tiering from the certified Final PEIR for the 2045 CAP.

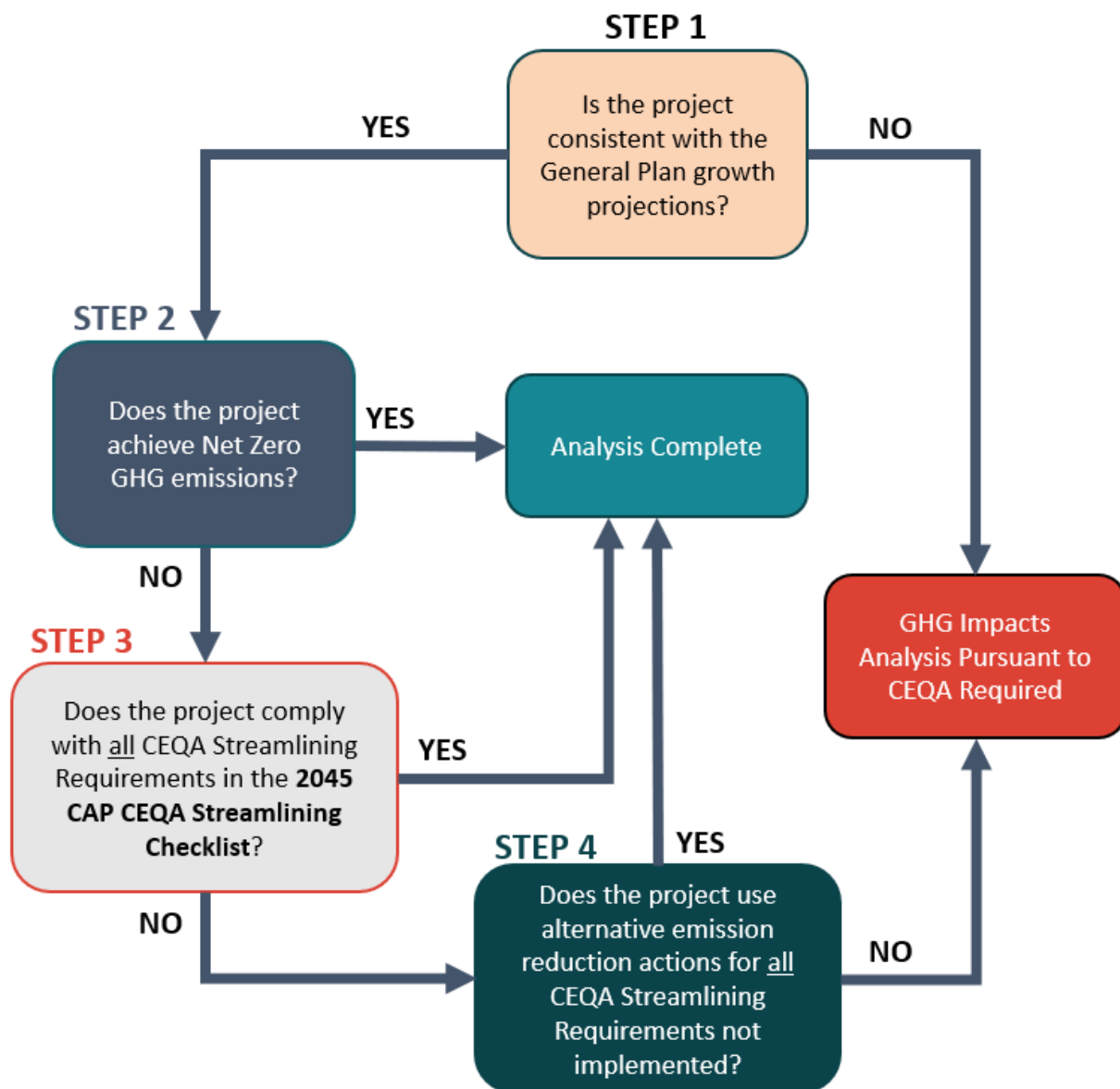


Figure F-1: Determining Consistency with the 2045 CAP for CEQA Streamlining

Step 1: Demonstrate Consistency with the General Plan Growth Projections

All projects must demonstrate consistency with the General Plan growth projections. **If a project is not consistent with the General Plan growth projections, then the 2045 CAP CEQA Streamlining Checklist may not be used for CEQA streamlining.** Complete the *General Plan Consistency* section of **Table F-1, General Plan and CEQA Streamlining Requirement Checklist**, below.

The options for determining General Plan consistency (included in Table F-1) are as follows:

- Is the proposed project consistent with the General Plan growth projections? If yes, move to **Step 2** below. If no, the proposed project may not streamline its GHG impacts analysis by using the 2045 CAP's EIR, and instead must prepare a comprehensive project-specific analysis of GHG emissions and impacts pursuant to CEQA. Such projects are also encouraged to incorporate all the CEQA streamlining requirements in the 2045 CAP CEQA Streamlining Checklist.

Step 2: Determine Whether the Project Screens Out of Certain CEQA Streamlining Requirements

Certain projects may screen out of compliance with certain CEQA streamlining requirements contained in Table F-1 if such projects meet specific criteria. These criteria are designed to ensure high efficiency and low GHG emissions and describe projects that would generally comply with the 2045 CAP.

2045 CAP CEQA Streamlining Checklist Screening Criterion: Projects may skip the *Demonstrate Compliance with the CEQA Streamlining Requirements* section of Table F-1 below if they meet the following criterion:

- If the project would achieve **net-zero GHG emissions**, the project is considered to comply with the 2045 CAP and the analysis is complete.

Net-zero GHG emissions means that the project's GHG emissions from construction and operational activities occurring at full buildout would result in zero total GHG emissions on an annual basis. In other words, all GHGs emitted the atmosphere during construction and operation by a project are balanced completely by GHG sequestration and removal over each calendar year period. Construction GHG emissions should be amortized for the project (typically 30 or 40 years) and added to the annual full buildout operational emissions to determine total annual emissions. Net-zero GHG emissions for a project does not consider GHG emissions from existing conditions or existing uses at the project site. For example, if a project emits 1,500 metric tons of carbon dioxide equivalent (MTCO₂e) per year for both construction and operations but includes the planting of enough new trees to sequester 1,500 MTCO₂e per year, the project would achieve net-zero GHG emissions.

To demonstrate that the project achieves net-zero GHG emissions, the applicant must submit a comprehensive quantitative project-specific analysis of all GHG emissions, sinks, and removals from construction and full buildout operations, consistent with CEQA guidelines and standard practice for modeling GHG emissions for projects. If the project meets this criterion, the project does not need to complete **Table F-1** below and the analysis is complete.

Transportation Screening Criteria: Projects may skip CEQA streamlining requirements #3, #4, #5, #11, and #12 of the *Demonstrate Compliance with the CEQA Streamlining Requirements*

section of Table F-1 below if they meet the following criteria (based on the 2020 Los Angeles County Department of Public Works Transportation Impact Analysis Guidelines⁶):

1. For development projects⁷:
 - a. If the project does not have a retail component, and the project generates a net increase of less than 110 daily vehicle trips,⁸ then it screens out.
 - b. If the project has a retail component, and it contains retail uses that do not exceed 50,000 square feet of gross floor area,⁹ then it screens out.
 - c. If the project has a residential component, and 100 percent of the units, excluding manager's units, are set aside for lower income households,¹⁰ then it screens out.
 - d. If the project is located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor¹¹ and meets all of the following criteria, then it screens out:
 - i. Has a Floor Area Ratio greater than 0.75.¹²
 - ii. Provides less parking than required by the Los Angeles County Code.¹³
 - iii. Is consistent with the Southern California Associated of Governments' Regional Transportation Plan/Sustainable Communities Strategy.¹⁴
 - iv. Does not replace residential units set aside for lower income households with a smaller number of market-rate residential units.
2. For transportation projects:¹⁵
 - a. If the project would not include the addition of through traffic lanes on existing or new highways, including general-purpose lanes, high-occupancy vehicle lanes, peak-period lanes, auxiliary lanes, and lanes through grade-separated interchanges (except managed lanes, transit lanes, and auxiliary lanes of less than 1 mile in length designed to improve roadway safety),¹⁶ then it screens out.
 - b. If the project would reduce roadway capacity and VMT,¹⁷ then it screens out.

⁶ Los Angeles County Department of Public Works. 2020. *Transportation Impact Analysis Guidelines*. July 2020. Available: <https://dpw.lacounty.gov/traffic/trafficreportmsg.cfm>. Accessed February 2022.

⁷ The Transportation Impact Analysis (TIA) Guidelines provide a list of development project types, which include residential, office, manufacturing, institutional, and retail project types. For a complete list, see page 11 of the TIA Guidelines.

⁸ As referenced in: Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

⁹ Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

¹⁰ Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

¹¹ Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

¹² Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

¹³ Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

¹⁴ Governor's Office of Planning and Research. 2018. *Technical Advisory on Evaluating Transportation Impacts in CEQA*. December 2018.

¹⁵ The TIA Guidelines describe transportation projects as projects that would increase vehicular/roadway capacity.

¹⁶ As noted above, the TIA Guidelines describe transportation projects as projects that would increase vehicular/roadway capacity.

¹⁷ A list of transportation projects that are not likely to lead to a substantial or measurable increase in vehicle miles travelled are included in the County's TIA Guidelines, pp. 17–19.

If the project meets the above criteria, it may skip certain transportation portions of the 2045 CAP CEQA Streamlining Checklist (see Table F-1 for details).

Step 3: Demonstrate Compliance with the 2045 CAP CEQA Streamlining Requirements

Table F-1 identifies the CEQA streamlining requirements for projects. Projects must demonstrate compliance with the 2045 CAP CEQA streamlining requirements listed in Table F-1 or document why the requirements are not applicable or are infeasible.¹⁸ The corresponding 2045 CAP measures and actions are indicated in the table to provide additional context. The full text of the 2045 CAP measures and actions is provided in the 2045 CAP (see Chapter 3 and Appendix E).

All applicants shall complete the following steps for the *Transportation, Building Energy and Water, Waste, and Agriculture, Forestry, and Other Land Use (AFOLU)* sections of **Table F-1** below (unless the project meets the transportation screening criteria identified in Step 1 above, in which case the project may skip completion of certain sections of the *Transportation* section of Table F-1):

- Step 3a.** Review the CEQA streamlining requirements described in the column titled “2045 CAP Streamlining Requirement.”
- Step 3b.** Use the check boxes in the column titled “Project Complies” to indicate whether the “Project Complies,” the requirement is “Not Applicable,” or the “Project Does Not Comply and Alternative Measure Proposed.”
- Step 3c.** Provide a qualitative analysis of the proposed project’s compliance with the CEQA streamlining requirements in the column titled “Description of Project Measure(s)/Documentation of Compliance.” This will be the basis for the CEQA analysis to demonstrate compliance with the 2045 CAP, and by extension, with SB 32. The qualitative analysis should provide:
 - i. A description of which streamlining requirements are included as part of the proposed project; or
 - ii. A description of why the streamlining requirement is not applicable to the proposed project; or
 - iii. A description of why the streamlining requirements are infeasible. If applicants select “Project Does Not Comply” or “Alternative Measure Proposed,” they must complete Table F-2 to document what alternative project measures will be implemented to achieve a similar level of GHG reduction and how those GHG emissions reduction estimates were calculated.
- Step 3d.** Provide specific project design criteria and/or reporting metrics to support the proposed project’s compliance with each CEQA streamlining requirement. Specific information is requested for each respective item in the 2045 CAP CEQA Streamlining Checklist.

Regarding item #2 above, the project applicant can only select “Not Applicable” if the requirement is not relevant to the project. The project applicant should only select “Project Does Not Comply and Alternative Measure Proposed” if it is infeasible, as defined by the CEQA Guidelines, for the

¹⁸ Please note that the CEQA streamlining requirements are not mitigation measures as defined by CEQA.

project to comply with the checklist requirement. Sufficient documentation of such infeasibility must be supplied to the County to support such a determination. The County retains ultimate discretion for determining the feasibility of the checklist requirement for the proposed project. Further, if “Project Does Not Comply and Alternative Measure Proposed” is selected for a specific checklist requirement, then the project applicant **must** identify an alternative measure to achieve the same or greater level of GHG emissions reduction as the CEQA streamlining requirement with which the project does not comply.

If the project applicant cannot fully complete these requirements, then the 2045 CAP CEQA Streamlining Checklist may not be used for CEQA streamlining of GHG emissions impacts. See the *Projects That Are Not Eligible for CEQA Streamlining* section for additional instructions.

The 2045 CAP CEQA streamlining requirements are listed as either “Tier 1” or “Tier 2.” These two levels are defined as follows:

Tier 1: Required for all discretionary projects in order to use CEQA streamlining for GHG impacts.

Tier 2: Encouraged for all discretionary projects. Although these measures are not required, projects are strongly encouraged to implement them. In Table F.1 below, these voluntary items are colored with gray shading.

In general, Tier 1 requirements were quantified in the 2045 CAP for GHG emissions reductions needed to achieve the 2030, 2035, and 2045 emissions reduction targets. Because these measures were quantified, they would be required for the 2045 CAP to achieve its full emissions reduction potential. Some Tier 1 measures were not quantified, but they either are required through other code or ordinance (such as compliance with the Transportation Demand Management Ordinance) or are deemed essential for the overall success of the 2045 CAP. Tier 2 requirements were identified as supporting actions but are not deemed essential for the overall success of the 2045 CAP.

Some Tier 1 and Tier 2 requirements point to future County regulations or ordinances that have not yet been developed, such as the forthcoming building decarbonization ordinance. In these instances, projects using the Checklist must only comply with currently adopted ordinances and requirements at the time of project approval.

The 2045 CAP CEQA Streamlining Checklist includes the following Tier 1 and Tier 2 requirements, organized by strategy area:

Energy Supply

1. Tier 1: Sunset Oil and Gas Operations
2. Tier 1: Utilize 100% Zero-Carbon Electricity

Transportation

3. Meets Transportation Screening Criteria
4. Tier 1: Increase Density Near High-Quality Transit Areas
5. Tier 1: Incorporate Bicycle and Pedestrian Infrastructure
6. Tier 1: Comply with the County Transportation Demand Management (TDM) Ordinance

7. Tier 1: Comply with the County's Transportation Impact Guidelines
8. Tier 1: Incorporate Electric Vehicle Charging Infrastructure
9. Tier 1: Decarbonize Trucks
10. Tier 1: Incorporate Zero-Emission Technologies for Off-Road Vehicles & Equipment
11. Tier 1: Electrify County Fleet Vehicles (for municipal projects only)
12. Tier 2: Achieve a High Jobs/Housing Balance
13. Tier 2: Encourage Transit, Active Transportation, and Alternative Modes of Transportation
14. Tier 2: Implement Parking Limitations

Building Energy and Water

15. Tier 2: Decarbonize Existing Buildings
16. Tier 2: Decarbonize New Buildings
17. Tier 1: Increase Building Energy Efficiency
18. Tier 1: Implement Water Use Efficiency and Water Conservation
19. Tier 2: Reduce the Life-Cycle Carbon Intensity of Building Materials and Phase Out the Use of High-Global Warming Potential (GWP) Refrigerants
20. Tier 2: Use Energy Storage and Microgrids
21. Tier 2: Use Recycled Water and Graywater for Non-potable Uses and Include Rainfall Capture

Waste

22. Tier 1: Compost Organic Materials
23. Tier 1: Recycle Recyclable Materials
24. Tier 2: Incorporate On-site Composting, Mulching, and/or Anaerobic Digestion

Agriculture, Forestry, and Other Land Use

25. Tier 1: Incorporate Tree Plantings and Expand Urban Forest Cover
26. Tier 2: Conserve Forests, Woodlands, Shrublands, Grasslands, Desert, and other Carbon-Sequestering Wildlands and Working Lands
27. Tier 2: Implement Regenerative Agricultural Practices

2045 CAP Appendix B, *Emissions Forecasting and Reduction Methods*, provides the quantitative basis for the CEQA streamlining requirements.

Step 4: Identify Alternative Project Emissions Reduction Measures and Additional GHG Reductions

Projects that propose alternative GHG emissions reduction measures to those identified in Table F-1 or propose to include additional GHG emissions reduction measures beyond those described in Table F-1 shall provide a summary explanation of the proposed measures and demonstrate

GHG reductions achievable through the proposed measures.¹⁹ Documentation for these alternative or additional project measures shall be documented in **Table F-2, Applicant Proposed Alternative Project Emissions Reduction Measures**. Any applicants who select “Project Does Not Comply and Alternative Measure Proposed” in Table F-1 must complete the following steps for Table F-2.

Step 4a. In the column titled “Description of Alternative Measure,” provide a qualitative description of what measure will be implemented, why it is proposed, and how it will reduce GHG emissions.

Step 4b. In the column titled “Description of GHG Reduction Estimate,” demonstrate how the alternative project measure would achieve the same or greater level of GHG emissions reductions as the CEQA streamlining requirement that it replaces. Documentation and calculation files must be attached separately.

An example alternative project measure may be installing additional EV charging infrastructure beyond what is required by the California Green Building Standards Code (CALGreen Code), County ordinance, or requirements in the forthcoming Zero Emission Vehicle Master Plan, to support zero-emission vehicles beyond what is specified in the 2045 CAP’s performance objectives for Measure T6 (Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales). The applicant would then demonstrate how this would achieve the same or greater level of GHG emissions reductions as the checklist requirement for which it serves as an alternative.

Carbon offset credits are not permitted to be used as alternative project emissions reduction measures.

Guidance for Quantifying GHG Reductions from Alternative Measures

In order to use alternative GHG emissions reduction measures to replace a CEQA streamlining requirement in Table F-1 below, project applicants must use the three-step process outlined below to quantitatively demonstrate how the alternative project measure would achieve the same or greater level of GHG emissions reductions as the CEQA streamlining requirement (or requirements) that it replaces.

Project applicants should follow these three steps:

Step 4c. Prepare a detailed quantified GHG emissions inventory for the project taking into consideration all GHG-reducing project features and 2045 CAP CEQA Streamlining Checklist items included as part of the project (including proposed mitigation measures, project design features, strategies being implemented, and other County requirements).

Project applicants shall prepare a detailed quantified GHG emissions inventory for the project taking into consideration all GHG-reducing project features and CEQA streamlining requirements included as part of the project (including proposed mitigation measures, project design features, strategies being implemented, and other County requirements), **except** for the alternative GHG emissions reduction measures proposed by the applicant to replace any Tier 1 CEQA streamlining requirement (as

¹⁹ Please note that the alternative GHG emissions reduction measures are not mitigation measures as defined by CEQA.

described in Step 4e). Applicants should use the California Emissions Estimator Model (CalEEMod), CARB's Emission FACtor model (EMFAC),²⁰ the California Air Pollution Control Officers Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*, and other commonly accepted GHG modeling methods and protocols.

Step 4d. For each Tier 1 CEQA streamlining requirement that the project will not meet, include a quantified calculation of the additional GHG emission reductions that would have occurred had the project implemented the Tier 1 Checklist streamlining requirement.

Project applicants shall, for all Tier 1 CEQA streamlining requirements that the project will not meet, a quantified calculation of the additional GHG emission reductions that would have occurred had the project implemented those Tier 1 CEQA streamlining requirements. In order to do this, applicants shall prepare a project model run assuming the implementation of all Tier 1 CEQA streamlining requirement that the project will not meet. Applicants should then compare the project's GHG emissions from this scenario with the project's GHG emissions from Step 4c above. The difference in GHG emissions between the two scenarios represents the GHG emission reductions that would have occurred had the project implemented all Tier 1 CEQA streamlining requirements; this is the amount of GHG emissions required to be reduced in total by the alternative GHG emissions reduction measures.

Step 4e. Propose an alternative measure (or set of measures) and demonstrate quantitatively that the alternative measures would achieve a GHG emission reduction equivalent to the GHG emission reduction that would have resulted from complying with the Tier 1 CEQA streamlining requirement.

Project applicants shall provide a quantified measure or set of measures that closes the gap between the two scenarios as quantified in Step 4c and Step 4d. In order to do this, applicants shall prepare a project model similar to Step 4c but include all alternative GHG emissions reduction measures proposed by the applicant. The resulting GHG emissions from this model run must equal or be less than the GHG emissions resulting from the project model run in Step 4d above which assumes the implementation of all Tier 1 CEQA streamlining requirements. In other words, the GHG emission reductions achieved by the alternative measures must meet or exceed the GHG emission reductions achieved by the Tier 1 CEQA streamlining requirements.

Project applicants shall submit documentation to the City demonstrating all three steps above. This can include model run inputs and/or outputs, excel calculation files, or other documentation of the emission calculations.

Potential alternative GHG emissions reduction measures to be considered include, but are not be limited to, measures recommended in the South Coast Air Quality Management District's latest CEQA Air Quality Guidelines, the CARB Scoping Plan (December 2022, as may be revised), the CAPCOA *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (December 2021, as may be revised), the

²⁰ California Air Resources Board. 2022. EMFAC2021 Model. Version v1.0.2. Available: <https://arb.ca.gov/emfac/>. Accessed June 2023.

CAPCOA CalEEMod, the California Attorney General's *Mitigation for Greenhouse Gas Emissions* guidance, and Reference Guides on Leadership in Energy and Environmental Design (LEED) published by the U.S. Green Building Council.

As for any project design features or mitigation measures implemented via the County's project approval and CEQA review process, the project applicant shall implement all alternative GHG emissions reduction measures proposed. For physical GHG reduction measures to be incorporated into the design of the project, the measures shall be included on the drawings submitted for construction-related permits and implemented during construction. For operational GHG reduction measures to be incorporated into the project, the measures shall be implemented on ongoing basis.

Projects That Are Not Eligible for CEQA Streamlining

In some cases, a project may not be able to comply with all of the 2045 CAP CEQA streamlining requirements. This may be because the project is inconsistent with the General Plan's growth projections as described in Step 1. Or a project may not be able to feasibly incorporate all CEQA streamlining requirements as identified in Table F-1 and discussed in Step 3; such a project may further be unable to adequately identify alternative project measures to achieve a similar level of GHG reduction to each CEQA streamlining requirement with which a project cannot comply. Such projects are not eligible to streamline environmental review of their GHG impacts using the 2045 CAP's PEIR and may be required to prepare a comprehensive project-specific analysis of GHG emissions pursuant to the CEQA Guidelines (including the CEQA Guidelines Appendix G Environmental Checklist).

A comprehensive project-specific analysis of GHG emissions must be prepared for any project that elects not to use the Checklist for CEQA streamlining by completing Table F-1 and (if applicable) Table F-2. Such an analysis shall quantify existing and projected GHG emissions and evaluate potential impacts pursuant to the CEQA Guidelines (including the CEQA Guidelines Appendix G Environmental Checklist). It is strongly encouraged that the project incorporate all the CEQA streamlining requirements in the 2045 CAP CEQA Streamlining Checklist, though this is not required.

F.3 2045 CAP CEQA Streamlining Checklist

Table F-1, General Plan and 2045 CAP CEQA Streamlining Checklist, allows the applicant to demonstrate compliance with the 2045 CAP's GHG emissions reduction measures and actions. This table addresses **Step 1: Demonstrate Consistency with the General Plan Growth Projections**; **Step 2: Determine Whether the Project Screens Out of Certain CEQA Streamlining Requirements**; and **Step 3: Demonstrate Compliance with the CEQA Streamlining Requirements**. This checklist must be completed for all applicable projects electing to streamline their CEQA GHG analysis.

Table F-2, 2045 CAP Greenhouse Gas Emissions Reduction Alternative Measures, allows the project applicant to document alternative GHG emissions reduction measures used to demonstrate compliance with the Table F-1 CEQA streamlining requirements. This table addresses **Step 4: Identify Alternative Project Emissions Reduction Measures and Additional GHG Reductions**. This checklist is required only for projects that propose to use alternative GHG emissions reduction measures.

Table F-1: General Plan and 2045 CAP CEQA Streamlining Checklist

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
Step 1: Demonstrate Consistency with the General Plan Growth Projections		
<p>1. The Project is Consistent with the General Plan Growth Projections</p> <p>The growth projections included in the General Plan were used in the 2045 CAP to estimate unincorporated Los Angeles County GHG emissions over time. Therefore, projects must be consistent with the General Plan to comply with the CEQA streamlining requirements. To determine a project's consistency with the General Plan growth projections, please answer the following question and provide an explanation with supporting documentation.</p> <p>Is the proposed project consistent with the existing land use designation of the Land Use Element and the 2021 Housing Element Update?</p> <p>If "Yes," proceed to Step 2: Determine Whether the Project Screens Out of Certain CEQA Streamlining Requirements below.</p> <p>If "No," the proposed project may not streamline its GHG impacts analysis by using the 2045 CAP's EIR and must prepare a comprehensive project-specific analysis of GHG emissions and impacts pursuant to CEQA.</p>	<p><i>Describe how the project is consistent with the General Plan growth projections. Provide additional supporting documentation as an attachment as needed.</i></p> <p><i>OR,</i></p> <p><i>Explain why the project is not consistent with the General growth projections, and whether the project would include a General Plan amendment. If the project includes a General Plan amendment, STOP HERE.</i></p>	<input type="checkbox"/> Yes <input type="checkbox"/> No
Step 2: Determine Whether the Project Screens Out of the CEQA Streamlining Requirements		
<p>Certain projects may screen out of the 2045 CAP CEQA Streamlining Requirements if they meet the following screening criterion.</p> <p>Does the project achieve net-zero GHG emissions? The project must conduct a comprehensive project-specific analysis of all GHG emissions, sinks, and removals, consistent with all CEQA guidelines and standard practice for modeling GHG emissions for projects, to demonstrate that the project achieves net-zero GHG emissions.</p> <p>If "Yes," the project would comply with the CEQA streamlining requirements and no additional analysis is needed (no project-specific GHG impact analysis would be required).</p> <p>If "No," proceed to Step 3: Demonstrate Compliance with the CEQA Streamlining Requirements below.</p>	<p><i>If "Yes," attach to this checklist the estimated project GHG emissions. Provide supporting calculation files and documentation for this analysis. If the proposed project is determined to result in net-zero GHG emissions, STOP HERE.</i></p> <p><i>If "No," proceed to Step 3 below.</i></p>	<input type="checkbox"/> Yes <input type="checkbox"/> No

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
Step 3: Demonstrate Compliance with the CEQA Streamlining Requirements		
Energy Supply		
<p>1. TIER 1: Sunset Oil and Gas Operations</p> <p>For any project involving the decommissioning, replacement, retrofit, or redesign of infrastructure or facilities associated with the oil and gas industry, including energy generation (i.e., cogen), the project must:</p> <ul style="list-style-type: none"> A) Comply with the Oil Well Ordinance (Title 22). B) Reduce fossil fuel-based emissions by at least 80% compared to existing conditions. C) If the project site includes existing active and abandoned oil wells, examine all wells for fugitive emissions of methane. Reduce such existing emissions by a minimum of 80%. D) To reduce any residual fossil fuel-based emissions generated by the project, incorporate carbon removal technologies including direct air capture and carbon and sequestration, as feasible. <p>Supports 2045 CAP Measures (and Actions): ES1 (ES1.1, ES1.2, ES1.3)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p><i>OR,</i></p> <p><i>Describe why this action is not applicable to your project.</i></p> <p><i>OR,</i></p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed as a replacement strategy (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide documentation of the project's ability to reduce fossil fuel-based emissions, including fugitive methane emissions.</i></p> <p><i>Provide the number of oil and gas operations/wells closed. Provide documentation of any carbon removal technologies incorporated at the project site.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>2. TIER 1: Utilize 100% Zero-Carbon Electricity</p> <p>The project must utilize 100% zero-carbon electricity on-site. The project must comply with one of the following options:</p> <ul style="list-style-type: none"> A) Install on-site renewable energy systems or participate in a community solar program to supply 100% of the project's estimated energy demand to the maximum extent feasible. B) Participate in Southern California Edison at the Green Rate level (i.e., 100% carbon-free electricity) for all electricity accounts associated with the project until SCE provides 100% carbon-free electricity for all accounts by default. C) Participate in the Clean Power Alliance at the Clean Rate level (i.e., 100% carbon-free electricity) for all electricity accounts associated with the project until CPA provides 100% carbon-free electricity for all accounts by default. D) A combination of #1, #2, and #3 above such that 100% of the project's electricity consumption is supplied by zero-GHG emission sources of power generation, whether by utilities or by on-site electricity generation or both. <p>Supports 2045 CAP Measures (and Actions): ES2 (ES2.1, ES2.2), ES3 (ES3.1, ES3.2, ES3.3, ES3.4, ES3.5, ES3.6)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p><i>OR,</i></p> <p><i>Describe why this action is not applicable to your project.</i></p> <p><i>OR,</i></p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below)</i></p> <p><i>IN ADDITION, provide the project's anticipated electricity demand, the project's participation and opt-out rates for SCE's Green Rate and CPA's Clean Rate electricity rate options used by tenants; and the total kW of solar PV panels installed at the project site.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
Transportation		
<p>3. Meets Transportation Screening Criteria</p> <p>For <u>development projects</u>, does the project:</p> <p>A) have no retail component and generate a net increase of less than 110 daily vehicle trips?</p> <p>If "Yes," skip streamlining requirements #4, #5, #12, #13, and #14 below. Please complete items #6 through #11 below.</p> <p>If "No," proceed to item (B) below.</p> <p>For <u>development projects</u>, does the project:</p> <p>B) have a retail component and contains retail uses that do not exceed 50,000 square feet of gross floor area?</p> <p>If "Yes," skip streamlining requirements #4, #5, #12, #13, and #14 below. Please complete items #6 through #11 below. If the project contains retail and is mixed use, proceed to item (C) below.</p> <p>If "No," proceed to item (C) below.</p> <p>For <u>development projects</u>, does the project:</p> <p>C) have a residential component and 100% of the units, excluding manager's units, are set aside for lower income households?</p> <p>If "Yes," skip streamlining requirements #4, #5, #12, #13, and #14 below. Please complete items #6 through #11 below. If the project contains retail and is mixed use, proceed to item (D) below.</p> <p>If "No," proceed to item (D) below.</p> <p>For <u>development projects</u>:</p> <p>D) Is the project located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor <u>and</u>:</p> <ul style="list-style-type: none"> i. has a Floor Area Ratio greater than 0.75? ii. provides less parking than required by the Los Angeles County Code? iii. is consistent with the Southern California Association of Governments (SCAG) Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS)? iv. does not replace residential units set aside for lower income households with a smaller number of market-rate residential units? <p>If "Yes," skip streamlining requirements #4, #5, #12, #13, and #14 below. Please complete items #6 through #11 below.</p> <p>If "No," proceed to streamlining requirement #3 below.</p> <p>For <u>transportation projects</u>, does the project meet <u>one</u> of the following transportation screening criteria?</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p><i>OR,</i></p> <p><i>Describe why such actions are infeasible and identify the alternative measure(s) proposed as an alternative strategy (provide additional documentation as necessary).</i></p>	<p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>A) The project would not include the addition of through traffic lanes on existing or new highways, including general-purpose lanes, high-occupancy vehicle (HOV) lanes, peak-period lanes, auxiliary lanes, and lanes through grade-separated interchanges (except managed lanes, transit lanes, and auxiliary lanes of less than 1 mile in length designed to improve roadway safety).</p> <p>B) The project would reduce roadway capacity and VMT.</p> <p>If “Yes,” skip streamlining requirements #4, #5, #12, #13, and #14 below. Please complete items #6 through #11 below.</p> <p>If “No,” proceed to streamlining requirement #4 below.</p> <p>Supports 2045 CAP Measures (and Actions): T1 (T1.1, T1.2)</p>		
<p>4. TIER 1: Increase Density Near High-Quality Transit Areas</p> <p>If the project is located within a High Quality Transit Area (HQTa), it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Rezoning Program.</p> <p>If the project is not located within an HQTa, it must locate residential and employment centers within 1 mile of an HQTa.</p> <p>Supports 2045 CAP Measures (and Actions): T1 (T1.1, T1.2)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed as a replacement strategy (provide additional documentation as described below).</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>5. TIER 1: Incorporate Bicycle and Pedestrian Infrastructure</p> <p>The project must incorporate pedestrian and bicycle infrastructure into its design:</p> <p>A) Provide pedestrian facilities and connections to public transportation consistent with the Pedestrian Action Plan, Active Transportation Plans, and Vision Zero Action Plan, and any other relevant governing plan.</p> <p>B) Provide bicycle facilities consistent with the Bicycle Master Plan, Active Transportation Plans, and Vision Zero Action Plan, and any other relevant governing plan, and meet or exceed minimum standards for bicycle facilities in the Zoning Code and CALGreen Code.</p> <p>C) Increase sidewalk coverage to improve pedestrian access.</p> <p>D) Improve degraded or substandard sidewalks.</p> <p>E) Incorporate best practices to ensure pedestrian infrastructure is contiguous and links externally with existing and planned pedestrian facilities; best practices include high-visibility crosswalks, pedestrian hybrid beacons, and other pedestrian signals, mid-block crossing walks, pedestrian refuge islands, speed tables, bulb-outs (curb extensions), curb ramps, signage, pavement markings, pedestrian-only connections and districts, landscaping, and other improvements to pedestrian safety.</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed as a replacement strategy (provide additional documentation as described below)</i></p> <p><i>IN ADDITION, provide the length and/or amount of bicycle and pedestrian infrastructure incorporated, such as feet or miles of bikeways.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>F) Minimize barriers to pedestrian access and interconnectivity, such as walls, landscaping buffers, slopes, and unprotected crossings.</p> <p>G) Provide bicycle facilities for new and expanded buildings, new dwelling units, change of occupancy, increase of use intensity, and added off-street vehicle parking spaces.</p> <p>H) Provide short- and long-term (secure) bicycle parking for at least 5% of motorized vehicle capacity and nothing less than CALGreen Code requirements, whichever is more restrictive.</p> <p>I) Support the County's goal to increase bikeway miles by 300 percent by 2030 (including Class I bike paths, Class II bike lanes, and Class III bike routes).</p> <p>Supports 2045 CAP Measures (and Actions): T3 (T3.1, T3.2, T3.3)</p>		
<p>6. TIER 1: Comply with the County Transportation Demand Management (TDM) Ordinance</p> <p>The Project must comply with the TDM ordinance at the time of project approval. This may include preferential carpool/vanpool parking, bicycle parking, and shower facilities and locker rooms; trip reduction plans; transit-supportive infrastructure development; and similar strategies. Comply with any applicable VMT reduction target and incorporate any required monitoring mechanisms for development, subject to the ordinance.</p> <p>Supports 2045 CAP Measures (and Actions): T4 (T4.5)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below)</i></p> <p><i>IN ADDITION, provide the number of employers participating in the TDM program, the total trip reduction goals for the project's TDM program, and the total trips and VMT reduced via the project's TDM program.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>7. TIER 1: Comply with the County's Transportation Impact Guidelines</p> <p>The project must comply with the County's current Transportation Impact Analysis (TIA) Guidelines. Projects may screen out if they meet certain criteria, such as being located in a transit priority area or local-serving retail development less than 50,000 square feet. Projects that do not screen out must meet the VMT efficiency metrics identified by the TIA Guidelines (e.g., daily VMT per capita for residential projects that is 16.8% below the existing residential VMT per capita for the Baseline Area in which the project is located) and quantitatively demonstrate how these metrics are achieved, pursuant to the TIA Guidelines requirements.</p> <p>Supports 2045 CAP Measures (and Actions): T1, T2, T3, T4, T5</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed strategy (provide additional documentation as described below).</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>8. TIER 1: Incorporate Electric Vehicle Charging Infrastructure The project must incorporate zero-emission vehicle (ZEV) infrastructure and incentives into its design as follows:</p> <ul style="list-style-type: none"> A) Comply with any CALGreen Code requirement, County ordinance, building code, or condition of approval that requires a certain amount of electric vehicle (EV) charging infrastructure (EVCSS) and readiness. This may include minimum requirements for EV charging stations, EV-capable parking spaces, and EV-ready parking spaces. B) Comply with any provisions and requirements in the forthcoming Zero Emission Vehicle Master Plan.¹ C) Include electric options for promoting active transportation, such as electric scooters and e-bikes. D) Provide education and outreach to tenants and occupants about the benefits of ZEVs and the project's EV infrastructure. <p>Supports 2045 CAP Measures (and Actions): T6 (T6.1, T6.2, T6.3, T6.4, T6.5, T6.6, T6.7)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i> OR, <i>Describe why this action is not applicable to your project.</i> OR, <i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below)</i> <i>IN ADDITION, provide the number of ZEVs in the project's tenant's and vendor fleet, if available; the number of public and private EVCSS installed; and the number of scooters/e-bikes available to tenants.</i></p>	<p><input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>9. TIER 1: Decarbonize Trucks For projects that include goods movement facilities and/or warehouses, the project must incorporate freight decarbonization technologies and infrastructure, including:</p> <ul style="list-style-type: none"> A) Comply with any CALGreen Code requirement, County ordinance, building code, or condition of approval that requires a certain amount of EV charging infrastructure and readiness for goods movement facilities and trucks. B) Provide EVCSS at all new warehouse loading docks. C) Comply with any provisions and requirements in the forthcoming Zero Emission Vehicle Master Plan related to goods movement. D) Implement freight decarbonization technologies along highway corridors. E) For all goods movement facilities, install alternative fueling infrastructure such as EVCSS, green hydrogen fueling stations, and/or biomethane fueling stations. F) Comply with any established zero-emission delivery zones. <p>Supports 2045 CAP Measures (and Actions): T8 (T8.1, T8.2, T8.3, T8.4, T8.5)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i> OR, <i>Describe why this action is not applicable to your project.</i> OR, <i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i> <i>IN ADDITION, provide the number of ZEV trucks in the project's tenant's and vendor fleet if available and the number EVCS installed.</i></p>	<p><input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

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<p>10. TIER 1: Incorporate Zero-Emission Technologies for Off-Road Vehicles & Equipment</p> <p>The project must:</p> <ul style="list-style-type: none"> A) Prohibit the use of small equipment powered by gasoline, diesel, propane, or other fossil fuels, including lawn and garden equipment and outdoor power equipment, for all tenants and owners. B) Provide educational materials to tenants regarding the SCAQMD Electric Lawn and Garden Equipment Incentive and Exchange Program, Commercial Lawn & Garden Battery Buy-Down Rebate Program, the Residential Lawn Mower Rebate Program, the new requirements of AB 1346, and any other available options and incentives for purchasing zero-emission equipment, including rebates and subsidies offered by CARB, the County, or other agencies and entities. C) Use electric and zero-emission construction equipment during project construction to the maximum extent feasible. Such equipment shall include forklifts, manlifts, loaders, welders, saws, pumps, fixed cranes, air compressors, sweepers, aerial lifts, pressure washers, and other small equipment. At minimum, the project must use off-road construction equipment that meet CARB Tier 4 Final engine emission standards. D) Use electric and zero-emission agriculture and manufacturing equipment to the maximum extent feasible. <p>These requirements must be stipulated in the contract specifications for the project's construction and for the project's future tenants and any landscaping contracts for the property or tenants.</p> <p>Supports 2045 CAP Measures (and Actions): T9 (T9.1, T9.2, T9.3)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide off-road vehicle and equipment fleet count, type, and fuel type, as available.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>11. TIER 1: Electrify County Fleet Vehicles (for municipal projects only)</p> <p>For all new municipal projects and facilities that include the purchase or operation of new fleet vehicles, including public transit buses and shuttles, all such fleet vehicles must be ZEVs.</p> <p>Supports 2045 CAP Measures (and Actions): T7 (T7.1, T7.2)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the number of new ZEV buses and the total ZEV percentage of the project's fleet.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
12. TIER 2: Achieve a High Jobs/Housing Balance For projects with nonresidential development, the Project must incorporate the following design elements: A) Support the County's goal to achieve a job density of 300 jobs per acre. Supports 2045 CAP Measures (and Actions): T2 (T2.1)	<i>Describe how the project will achieve a job density of 300 jobs per acre.</i> OR, <i>Describe why this action is not applicable to your project.</i> OR <i>Describe why such actions are not incorporated into your project.</i> <i>IN ADDITION, provide the job density of the project in terms of jobs per acre.</i>	<input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply
13. TIER 2: Encourage Transit, Active Transportation, and Alternative Modes of Transportation For transit projects only, incorporate the following: A) Expand and improve frequency of existing network of County shuttles. B) Install bus-only lanes and signal prioritization along major thoroughfares. C) Install full bus rapid transit infrastructure along priority corridors. For all other projects, incorporate the following: A) Provide new mobility services, such as micro transit, autonomous delivery vehicles, and on-demand autonomous shuttles, in unincorporated Los Angeles County. B) Offer free transit passes for students, youth, seniors, disabled, and low-income populations. C) Implement telecommuting by project tenants and residents. D) Establish temporary and permanent car-free areas at the project site. Supports 2045 CAP Measures (and Actions): T4 (T4.1, T4.2, T4.3, T4.6, T4.7, T4.8, T4.10)	<i>Describe which project compliance options from the leftmost column you are implementing.</i> OR, <i>Describe why this action is not applicable to your project.</i> OR, <i>Describe why such actions are not incorporated into your project.</i> <i>IN ADDITION, for transit projects, provide the size of area served by transit, the number of employees and residents served by transit, the transit service frequency and headways, the increase in headways or frequencies provided by the project, total transit service hours provided by transit, the number and length of bus-only lanes, and information on signal prioritization on transit routes implemented by the project.</i> <i>For non-transit projects, provide the number of residents within one-half mile of bus or active transportation services; information on any new mobility services offered, information on free transit passes offered, the number of employers participating in telecommuting programs, and the number and location of car-free areas provided by the project.</i>	<input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply
14. TIER 2: Implement Parking Limitations Projects should include the following characteristics: A) Shared and reduced parking strategies, such as shared parking facilities, carpool/vanpool-only spaces, shuttle facilities, EV-only spaces, and reduced parking below allowable amount B) Minimum amount of required parking C) Unbundled parking costs to reflect cost of parking D) Parking pricing to encourage "park-once" behavior E) Compliance with all County parking reform strategies and policies Supports 2045 CAP Measures (and Actions): T5 (T5.1)	<i>Describe which project compliance options from the leftmost column you are implementing.</i> OR, <i>Describe why this action is not applicable to your project.</i> OR, <i>Describe why such actions not incorporated into your project.</i> <i>IN ADDITION, provide the total number of parking spaces, carpool/vanpool-only spaces, shuttle facilities, EV-only spaces; information on parking costs and unbundling; and parking prices.</i>	<input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
Building Energy and Water		
<p>15. TIER 2: Decarbonize Existing Buildings</p> <p>This action applies only to projects that include a retrofit, remodel, or redesign of an existing building. If the proposed project does not include a retrofit, remodel, or redesign, select "Not Applicable" in the <i>Project Complies</i> column.</p> <p>The project must incorporate the following design elements:</p> <ul style="list-style-type: none"> A) Achieve zero GHG emissions for on-site energy use. B) Comply with all applicable Building Performance Standards.² C) Comply with all building carbon intensity limits.³ D) If the project is a major renovation, achieve ZNE and/or comply with the City's ZNE ordinance.⁴ <p>Supports 2045 CAP Measures (and Actions): E1 (E1.1, E1.2, E1.3, E1.4, E1.5, E1.6)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the project's anticipated GHG emissions associated with on-site energy consumption (i.e., natural gas use and electricity use) and the number of existing buildings transitioned to zero-GHG buildings.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>16. TIER 2: Decarbonize New Buildings</p> <p>For projects under construction before 2030, the project must achieve zero GHG emissions for on-site energy use, and/or comply with the County's building decarbonization ordinance, unless the project meets specific exemptions identified in the ordinance.⁵</p> <p>For projects under construction after 2030, the project must be zero-net-energy (ZNE) and achieve zero GHG emissions for on-site energy use, and/or comply with the County's ZNE ordinance, unless the project meets specific exemptions identified in the ordinance.⁶</p> <p>Supports 2045 CAP Measures (and Actions): E2 (E2.1, E2.2, E2.3)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the number and square footage of zero GHG emission buildings built, all ZNE buildings built, and the total GHG emissions anticipated for all buildings.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>17. TIER 1: Increase Building Energy Efficiency</p> <p>This action applies only to projects that include a retrofit of an existing building. If the proposed project does not include a retrofit, select "Not Applicable" in the <i>Project Complies</i> column.</p> <p>The project shall incorporate the following energy efficiency measures into the design:</p> <ul style="list-style-type: none"> A) Comply with all applicable building performance standards.⁷ B) Incorporate strategic energy management programs to reduce building energy demands. C) Conduct an energy audit or benchmarking analysis to identify potential energy savings opportunities and implement such opportunities. D) Achieve CALGreen Code Tier 2 or voluntary building energy measures as they apply to the retrofit. E) Replace existing appliances with higher-efficiency models. F) Install heat-trapping surfaces to cool or green surfaces, as feasible. G) Participate in SoCalREN, SCE, CPA, or other energy efficiency programs. H) Conduct other energy efficiency retrofits. I) Achieve zero-net-energy, if feasible. <p>Supports 2045 CAP Measures (and Actions): E4 (E4.1, E4.2, E4.3)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the total number of energy retrofits performed, the building size (square footage) retrofit, the total project energy use and anticipated energy savings through retrofits, and the number and area of cool and green roofs installed.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>
<p>18. TIER 1: Implement Water Use Efficiency and Water Conservation</p> <p>The project must comply with the current water conservation ordinance in place, including any requirements for LEED or Sustainable SITES standards.⁸</p> <p>The project must also incorporate water use efficiency and conservation measures, including:</p> <ul style="list-style-type: none"> A) High-efficiency appliances/fixtures to reduce water use, and/or include water-efficient landscape design B) CALGreen Code Tier 1 and Tier 2 voluntary water conservation measures C) Low-flow or high-efficiency water fixtures D) Water-efficient landscapes with lower water demands than required by the DWR 2015 Model Water Efficient Landscape Ordinance E) Drought-tolerant and native plant species only F) A comprehensive water conservation strategy G) Educational materials provided to future tenants and building occupants about water-saving behaviors and water-conserving landscaping 	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the project's estimated total water consumption (in GPCD or total gallons), the square footage of buildings that are water-neutral, and the project's building size (square footage).</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

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Supports 2045 CAP Measures (and Actions): E6 (E6.1, E6.2, E6.3, E6.4, E6.5)		
19. TIER 2: Reduce the Life-Cycle Carbon Intensity of Building Materials and Phase Out the Use of High-GWP Refrigerants The project must incorporate the following design elements to the maximum extent feasible: A) For projects that are not fully electric, incorporate biomethane into the natural gas mix in place of traditional natural gas. B) Use negative-carbon concrete for all construction. C) Use low-GWP refrigerants and fire suppression equipment for all uses on-site. D) Comply with all County codes and ordinances regarding building material carbon intensity and high-GWP refrigerants and other gases. Supports 2045 CAP Measures (and Actions): E3 (E3.1, E3.2, E3.3, E3.4)	Describe which project compliance options from the leftmost column you are implementing. OR, Describe why this action is not applicable to your project. OR, Describe why such actions are not incorporated into your project. IN ADDITION, provide the amount of biomethane used by the project, the quantify of negative-carbon concrete for construction, and the quantity of low-GWP refrigerants and fire suppression equipment used.	<input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply
20. TIER 2: Use Energy Storage and Microgrids The project must incorporate the following design elements to the maximum extent feasible: A) Install energy storage systems. B) Use a building-scale or community microgrid to support demand management and peak shaving. Supports 2045 CAP Measures (and Actions): ES4 (ES4.1, ES4.2, ES4.3, ES4.4, ES4.5)	Describe which project compliance options from the leftmost column you are implementing. OR, Describe why this action is not applicable to your project. OR, Describe why such actions are not incorporated into your project IN ADDITION, provide the total kW of energy storage capacity installed and operational information for any microgrids utilized, if applicable.	<input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply
21. TIER 2: Use Recycled Water and Graywater for Non-potable Uses and Include Rainfall Capture The project must implement water reuse strategies onsite through the following design elements: A) Require use of reclaimed/recycled water and/or graywater for outdoor uses. B) Install residential graywater systems that meet appropriate regulatory standards. C) Install rainfall capture systems. D) Install dual plumbing for the use of recycled water. Supports 2045 CAP Measures (and Actions): E5 (E5.1, E5.2, E5.3, E5.4)	Describe which project compliance options from the leftmost column you are implementing. OR, Describe why this action is not applicable to your project. OR, Describe why such actions are not incorporated into your project IN ADDITION, provide the amount of reclaimed/recycled water and/or graywater used by the project.	<input type="checkbox"/> Project Complies <input type="checkbox"/> Not Applicable <input type="checkbox"/> Project Does Not Comply

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
Waste		
<p>22. TIER 1: Compost Organic Materials</p> <p>The project must comply with all state and local requirements for composting and organic waste collection, including but not limited to Chapter 20.91 (Mandatory Organic Waste Disposal Reduction Ordinance) of the Los Angeles County Code, including all County requirements pursuant to AB 1826 and SB 1383. The project must also:</p> <ul style="list-style-type: none"> A) Provide proper storage, collection, and loading of organics in a manner that is convenient and safe for all users of the building. Ensure there are sufficient sizes of collection containers for organics. Containers must be kept clean, be clearly labeled, and are co-located next to any other solid waste receptacles. Ensure sufficient pick-up of collection containers to meet the needs of the occupants. B) Include space for multi-stream collection containers for both recycling and organics in any location where a solid waste container is traditionally housed. This includes both outdoor collection containers serviced by a waste hauler or indoor collection containers utilized by occupants. Provide educational material and training to occupants and tenants in how to properly separate organics from all other solid waste and place organics in a separate container designated for organics. C) Ensure that all project occupants and tenants will separate compostables from all other refuse and place compostables in a separate container designated for composting. D) Require that all single-use food service ware (plates, bowls, cups) and accessories (straws, utensils, condiment cups) used by tenants at the project site be BPI certified compostable fiber, except where certain materials may be deemed medically necessary or necessary to ensure equal access for persons with disabilities. E) Require that any single-use accessories (straws, utensils, condiment cups) be only available on demand. F) Ensure that containers are audited annually to ensure proper service levels and to check for contamination. Report findings back to occupants within 30 days and to the County as requested. G) Work with the waste hauler to provide educational materials to tenants on at least an annual basis. H) Provide compliance data to the County as required for any current auditing program. <p>Supports 2045 CAP Measures (and Actions): W1 (W1.1, W1.2) and W2 (W2.1, W2.2, W2.5)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p><i>OR,</i></p> <p><i>Describe why this action is not applicable to your project.</i></p> <p><i>OR,</i></p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the project's estimated organic waste generation (tons), the amount of organic waste sent to landfills, and the amount of organic waste generated by the project which is diverted from landfills.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>23. TIER 1: Recycle Recyclable Materials</p> <p>The project must comply with all state and local requirements for recycling, also including but not limited to Section 20.72.170 (Recyclable Materials Collection Program) of the Los Angeles County Code and all County requirements pursuant to AB 341 and AB 1826. The project must also:</p> <ul style="list-style-type: none"> A) Comply with any zero waste ordinance in place at the time of project approval. B) Comply with all Mandatory Construction & Demolition (C&D) Recycling Program Requirements, including Chapter 20.87 (Construction and Demolition Debris Recycling and Reuse). C) Provide substantial storage, collection, and loading of recyclables in a manner that is convenient and safe for all users of the building. Ensure there are sufficient sizes and amount of collection containers for recyclables. Containers must be kept clean, be clearly labeled, and are co-located next to any other solid waste receptacles. Ensure sufficient pick-up of collection containers to meet the needs of the occupants. D) Include space for multi-stream collection containers in any location where a solid waste container is traditionally housed. This includes both outdoor collection containers serviced by a waste hauler or indoor collection containers utilized by occupants. Provide educational materials and training to occupants and tenants in how to properly separate recyclables from all other solid waste and place recyclables in a separate container designated for recycling. E) Ensure that all project occupants and tenants separate recyclables from all other refuse and place recyclables in a separate container designated for recycling. F) Require that all single-use food service ware (plates, bowls, cups) and accessories (straws, utensils, condiment cups) used by tenants at the project site be BPI certified compostable fiber, except where certain materials may be deemed medically necessary or necessary to ensure equal access for persons with disabilities. G) Require that any single-use accessories (straws, utensils, condiment cups) be only available on demand. H) Ensure that containers are audited annually to ensure proper service levels and to check for contamination. Report findings back to occupants within 30 days and to the County as requested. I) Work with the waste hauler to provide educational materials to tenants on at least an annual basis. J) Provide compliance data to the County as required for any current auditing program. <p>Supports 2045 CAP Measures (and Actions): W1 (W1.1, W1.3)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p><i>OR,</i></p> <p><i>Describe why this action is not applicable to your project.</i></p> <p><i>OR,</i></p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the total C&D tonnage recycled and/or diverted from landfills, the project's estimated recyclable waste generation (tons), the amount of recyclable waste sent to landfills, and the amount of recyclable waste generated by the project which is diverted from landfills.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>24. TIER 2: Incorporate On-Site Composting, Mulching, and/or Anaerobic Digestion</p> <p>The project may incorporate organic waste processing capabilities, such as composting, mulching, or anaerobic digestion facilities (where applicable). Collaborate with PW and waste agencies to share organic processing information with interested parties.</p> <p>Supports 2045 CAP Measures (and Actions): W2 (W2.2, W2.3, W2.4)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are not incorporated into your project.</i></p> <p><i>IN ADDITION, provide information on any anaerobic digestion facilities constructed including their capacity and the amount of organic waste digested and converted to electricity, and the project's total energy generation from organic waste.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply</p>
Agriculture, Forestry, and Other Land Use (AFOLU)		
<p>25. TIER 1: Incorporate Tree Plantings and Expand Urban Forest Cover</p> <p>The project must:</p> <ul style="list-style-type: none"> A) Enhance and expand urban forest cover and vegetation by planting trees and other vegetation. All trees and vegetation planted must be drought-tolerant or California native trees and plants. B) Comply with the Urban Forest Management Plan. C) Replace all native trees removed by the project with an equal or greater number of new trees. D) To the extent feasible, incorporate equitable urban forest practices and prioritize: <ul style="list-style-type: none"> i. Tree- and park-poor communities ii. Climate and watershed-appropriate and drought/pest-resistant vegetation iii. Appropriate watering, maintenance, and disposal practices iv. Shading v. Biodiversity <p>Supports 2045 CAP Measures (and Actions): A3 (A3.1, A3.2, A3.3)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are infeasible and identify the alternative measure proposed (provide additional documentation as described below).</i></p> <p><i>IN ADDITION, provide the total number of trees planted, the total tree canopy cover, the project's total green space area, and the area of impervious surface converted to pervious surfaces.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply and Alternative Measure Proposed</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>26. TIER 2: Conserve Forests, Woodlands, Shrublands, Grasslands, Desert, and other Carbon-Sequestering Wildlands and Working Lands</p> <p>For all projects involving the preservation, conservation, and restoration of agricultural lands, working lands, rangelands, forest lands, wetlands, and other wildlands in unincorporated Los Angeles County, the project may:</p> <ul style="list-style-type: none"> A) Support the use of public and private land for urban and peri-urban agriculture, such as community gardens, and including urban vertical surfaces. B) Conserve and restore natural forest lands, wetlands and wildlands through land acquisitions and conservation easements. C) Preserve existing agricultural and farmlands, including those mapped as Agricultural Resource Areas. Expand adjoining areas to enlarge farmland area. D) Actively manage forests to reduce wildfire risk and prevent carbon loss in forest lands. <p>Supports 2045 CAP Measures (and Actions): A1 (A1.1 and A1.2)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are not incorporated into your project.</i></p> <p><i>IN ADDITION, provide the total number of acres preserved, conserved, and restored by land type, the number and size of community gardens added, the amount of vertical surface converted, and the acres of forest land managed for wildfire risk reduction and carbon stock savings if applicable.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply</p>
<p>27. TIER 2: Implement Regenerative Agricultural Practices</p> <p>For all agricultural projects, the project may:</p> <ul style="list-style-type: none"> A) Utilize fallow and field resting practices to reduce bare-fallow land by adding cover crops and promoting crop rotation for active agricultural sites to improve soil quality and limit risks of nutrient erosion, pollutant runoff, and yield reduction. B) Implement a carbon farming plan with the primary objectives of carbon removal and regenerative agriculture. C) Use compost and/or organic fertilizer. <p>Supports 2045 CAP Measures (and Actions): A2 (A2.1, A2.2)</p>	<p><i>Describe which project compliance options from the leftmost column you are implementing.</i></p> <p>OR,</p> <p><i>Describe why this action is not applicable to your project.</i></p> <p>OR,</p> <p><i>Describe why such actions are not incorporated into your project.</i></p> <p><i>IN ADDITION, provide the quantity of synthetic fertilizers and compost used / applied, the number of acres of cover crops using regenerative agricultural techniques, the tonnage of fertilizer/compost produced each year.</i></p>	<p><input type="checkbox"/> Project Complies</p> <p><input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> Project Does Not Comply</p>

CEQA STREAMLINING REQUIREMENT	DESCRIPTION OF PROJECT MEASURE(S) / DOCUMENTATION OF COMPLIANCE / EXPLANATION OF NON-COMPLIANCE	PROJECT COMPLIES
<p>NOTES:</p> <p>Abbreviations: 2045 CAP = 2045 Los Angeles County Climate Action Plan; AB = Assembly Bill; AFOLU = Agriculture, Forestry, and Other Land Use; C&D = Construction & Demolition; CALGreen Code = California Green Building Standards Code; CAP = Climate Action Plan; CARB = California Air Resources Board; CEQA = California Environmental Quality Act; County = County of Los Angeles; CPA = Clean Power Alliance; DU = dwelling unit(s); DWR = California Department of Water Resources; EIR = environmental impact report; EV = electric vehicle; EVCS = electric vehicle charging station; General Plan = Los Angeles County General Plan 2035; GHG = greenhouse gas; GWP = global warming potential; HOV = high-occupancy vehicle; HQT = High Quality Transit Area; kW = kilowatts; LEED = Leadership in Energy and Environmental Design; MWELO = Model Water Efficient Landscape Ordinance; PV = photovoltaic; PW = Los Angeles County Department of Public Works; RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SB = Senate Bill; SCAG = Southern California Association of Governments; SCAQMD = South Coast Air Quality Management District; SCE = Southern California Edison; SoCalREN = Southern California Regional Energy Network; TDM = transportation demand management; TIA = Transportation Impact Analysis; VMT = vehicle miles traveled; WUI = wildland urban interface; ZEV = zero-emission vehicle; ZNE = zero net energy.</p> <p>¹ Although the County has not yet developed the Zero Emission Vehicle Master Plan, the County will develop such a Plan before 2030, pursuant to Implementing Action T6.1 in the 2045 CAP.</p> <p>² Although the County has not yet developed building performance standards, the County will develop such a standard before 2030, pursuant to Implementing Action E1.1 in the 2045 CAP.</p> <p>³ Although the County has not yet developed carbon intensity limits, the County will develop such a standard before 2030, pursuant to Implementing Action E1.2 in the 2045 CAP.</p> <p>⁴ Although the County has not yet developed a ZNE ordinance, the County will develop such a standard before 2030, pursuant to Implementing Action E1.3 in the 2045 CAP.</p> <p>⁵ Although the County has not yet developed a building decarbonization ordinance, the County will develop such an ordinance before 2030, pursuant to Implementing Action E2.1 in the 2045 CAP.</p> <p>⁶ Although the County has not yet developed a ZNE ordinance, the County will develop such a standard before 2030, pursuant to Implementing Action E2.2 in the 2045 CAP.</p> <p>⁷ Although the County has not yet developed building performance standards, the County will develop such a standard before 2030, pursuant to Implementing Action E4.1 in the 2045 CAP.</p> <p>⁸ Although the County has not yet developed a net-zero water ordinance, the County will develop such a standard before 2030, pursuant to Implementing Action E6.1 in the 2045 CAP.</p> <p>⁹ Although the County has not yet developed building performance standards for building material carbon intensity and high-GWP refrigerants, the County will develop standards before 2030, pursuant to Implementing Actions E3.3 and E3.4 in the 2045 CAP.</p>		

Table F-2: 2045 CAP Greenhouse Gas Emissions Reduction Alternative Measures

DESCRIPTION OF PROPOSED ALTERNATIVE MEASURE	DESCRIPTION OF GHG REDUCTION ESTIMATE
Alternative for 2045 CAP Compliance Requirement #: [Number] Emissions Sector: [transportation, building energy and water, waste, AFOLU, or other sector] Measure Description: [Describe the proposed project measure and why it is proposed]	<i>[Demonstrate the effectiveness of the proposed measure to reduce the project's GHG emissions. Include a description of how your measure will reduce emissions and provide supporting quantification documentation and assumptions. The GHG emissions reduction analysis must be consistent with all CEQA guidelines and standard practice for modeling GHG emissions for project measures and actions.]</i>
Alternative for 2045 CAP Compliance Requirement #: [Number] Emissions Sector: [transportation, building energy and water, waste, AFOLU, or other sector] Measure Description: [Describe the proposed project measure and why it is proposed]	<i>[Demonstrate the effectiveness of the proposed measure to reduce the project's GHG emissions. Include a description of how your measure will reduce emissions and provide supporting quantification documentation and assumptions. The GHG emissions reduction analysis must be consistent with all CEQA guidelines and standard practice for modeling GHG emissions for project measures and actions.]</i>
Alternative for 2045 CAP Compliance Requirement #: [Number] Emissions Sector: [transportation, building energy and water, waste, AFOLU, or other sector] Measure Description: [Describe the proposed project measure and why it is proposed]	<i>[Demonstrate the effectiveness of the proposed measure to reduce the project's GHG emissions. Include a description of how your measure will reduce emissions and provide supporting quantification documentation and assumptions. The GHG emissions reduction analysis must be consistent with all CEQA guidelines and standard practice for modeling GHG emissions for project measures and actions.]</i>
Alternative for 2045 CAP Compliance Requirement #: [Number] Emissions Sector: [transportation, building energy and water, waste, AFOLU, or other sector] Measure Description: [Describe the proposed project measure and why it is proposed]	<i>[Demonstrate the effectiveness of the proposed measure to reduce the project's GHG emissions. Include a description of how your measure will reduce emissions and provide supporting quantification documentation and assumptions. The GHG emissions reduction analysis must be consistent with all CEQA guidelines and standard practice for modeling GHG emissions for project measures and actions.]</i>
Alternative for 2045 CAP Compliance Requirement #: [Number] Emissions Sector: [transportation, building energy and water, waste, AFOLU, or other sector] Measure Description: [Describe the proposed project measure and why it is proposed]	<i>[Demonstrate the effectiveness of the proposed measure to reduce the project's GHG emissions. Include a description of how your measure will reduce emissions and provide supporting quantification documentation and assumptions. The GHG emissions reduction analysis must be consistent with all CEQA guidelines and standard practice for modeling GHG emissions for project measures and actions.]</i>
Alternative for 2045 CAP Compliance Requirement #: [Number] Emissions Sector: [transportation, building energy and water, waste, AFOLU, or other sector] Measure Description: [Describe the proposed project measure and why it is proposed]	<i>[Demonstrate the effectiveness of the proposed measure to reduce the project's GHG emissions. Include a description of how your measure will reduce emissions and provide supporting quantification documentation and assumptions. The GHG emissions reduction analysis must be consistent with all CEQA guidelines and standard practice for modeling GHG emissions for project measures and actions.]</i>

F.4 Offsite GHG Reduction Program Framework

Introduction

Action ES5.4 of the 2045 CAP would establish an Offsite GHG Emissions Reduction Program (Offsite Program) for new development to use as a GHG reduction or mitigation pathway for 2045 CAP compliance and to fund programs for reducing GHG emissions in the built environment. This program would allow new development to fund decarbonization programs for existing development to accelerate 2045 CAP measures and actions or go beyond 2045 CAP measures and actions. Future projects that cannot achieve net-zero GHG emissions or are unable to comply with all CEQA streamlining requirements would have the option to participate in the Offsite Program. The Offsite GHG Reduction Program could be used for projects that propose alternative GHG emissions reduction measures to those identified in Table F-1, or that propose to include additional GHG emissions reduction measures beyond those described in Table F-1. This program would allow project applicants to implement local projects that reduce GHG emissions in unincorporated Los Angeles County (referred to herein as *offsite projects*). Such offsite projects must not otherwise be required by law or regulation and would not have happened but for the requirements placed on the project by the 2045 CAP CEQA Streamlining Checklist.

Once the County has instituted the Offsite GHG Reduction Program, project applicants will be able to use the program to complete Table F-2. Once established, the Offsite GHG Reduction Program should only be used after all feasible on-site GHG reduction measures are implemented at the project site to demonstrate compliance with the CEQA streamlining requirements.

This section represents a *framework* for the forthcoming Offsite Program; the actual program will be developed after the 2045 CAP is adopted.

CARB Guidance on Offsite GHG Reductions

As discussed in Section F.1, CARB supports “off-site GHG mitigation” in Appendix D of the 2022 Scoping Plan for projects that have implemented all feasible on-site GHG reductions: “If implementation of all feasible on-site GHG reduction measures is insufficient to reduce a project’s impact to a less-than-significant level, the State recommends that the lead agency next explore options to fund or implement **local**, off-site direct GHG reduction strategies.”²¹ The Offsite Program would achieve these goals.

Relationship to 2045 CAP Measures and Actions

The offsite projects that will be allowed in the program fall into two general categories:

1. Offsite projects *included* in the 2045 CAP’s measures and actions.
2. Offsite projects *not included* in the 2045 CAP’s measures and actions.

Offsite Projects Included in the 2045 CAP

This category represents projects (and the GHG emissions reductions they create) that *are* already included in the 2045 CAP’s measures and actions. An allowable offsite project could

²¹ California Air Resources Board. 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Appendix D, “Local Actions.” November 16, 2022. Available: <https://ww2.arb.ca.gov/sites/default/files/2022-11/2022-sp-appendix-d-local-actions.pdf>. Accessed in January 2023.

involve, for example, accelerating measures, actions, and/or programs that are already identified in the 2045 CAP by providing additional funding to that program. Such projects would not add new programs or actions not already included in the 2045 CAP; they would expand upon and/or accelerate these programs and actions. Example projects are discussed below.

Offsite Projects Not Included in the 2045 CAP

This category represents projects (and the GHG emissions reductions they create) that are *not* already included in the 2045 CAP's measures and actions. An allowable offsite project could involve, for example, creating or funding programs for implementing new technologies (e.g., zero-emission construction equipment) or implementing new emissions reduction measures or actions not considered in the 2045 CAP. Example projects are discussed below.

Offsite Projects Not Eligible

Offsite projects that are implementing planned 2045 CAP measures and actions on the 2045 CAP's identified timeline are not eligible for the Offsite Program. Additionally, an offsite project activity that would be mandated by any current or future ordinance (such as a future ZNE ordinance for new buildings) cannot be used in the Offsite Program.

Carbon offset credits are not permitted to be used as offsite projects. In other words, projects that generate carbon offset credits to be traded on a voluntary market registry are not permitted to be used in this program.

Location

All offsite projects must be located within the jurisdictional boundaries of unincorporated Los Angeles County. Therefore, emissions reductions achieved by such offsite projects will be accounted for in future GHG inventory updates and will contribute toward the emissions reduction targets, which are based on the jurisdictional boundaries of unincorporated Los Angeles County. See 2045 CAP Appendix A for a discussion of the inventory and forecast boundaries.

Offsite projects shall be in the following locations, in order of priority, to the extent available: (1) Within the neighborhood surrounding the project site; (2) within the greater surrounding community (i.e., town); (3) within the same Planning Area; and (4) in other Planning Areas, but within unincorporated Los Angeles County.

Standards

All offsite projects must achieve **six specific standards** to ensure that the GHG reductions produced by offsite projects are environmentally sound; namely that the GHG reductions be real, permanent, quantifiable, verifiable, enforceable, and additional, defined as follows:

- **Real** means that the offsite project's GHG reductions are the direct result of complete emissions accounting. In other words, *real* means that GHG reductions or GHG enhancements result from a demonstrable action or set of actions, and are quantified using appropriate, accurate, and conservative methodologies that account for all GHG

emissions sources, GHG sinks, and GHG reservoirs within the offsite project boundary and account for uncertainty.²²

- **Permanent** means either that GHG reductions and GHG removal enhancements are not reversible, or that when GHG reductions and GHG removal enhancements may be reversible, mechanisms are in place to replace any reversed GHG emissions reductions and GHG removal enhancements to ensure that all credited reductions endure for at least 100 years.
- **Quantifiable** means the ability to accurately measure and calculate GHG reductions or GHG removal enhancements relative to an offsite project's baseline in a reliable and replicable manner for all GHG emissions sources, GHG sinks, or GHG reservoirs included within the offsite project boundary, while accounting for uncertainty. GHG emissions reductions from an activity must be rigorously quantified, and such GHG reductions would only be permitted in an amount that corresponds to the GHG emissions that have been quantified. GHG emissions accounting must be accurate and adhere to standardized quantification methodologies, which are discussed further below.
- **Verifiable** means that an offsite project's assertion of GHG emissions reductions is well documented and transparent, such that it lends itself to an objective review by an accredited verification body. The forthcoming Offsite Program itself may require third-party verification.²³
- **Enforceable** means the authority of the County to hold a particular party responsible to take appropriate action if any of the provisions of the Offsite Program are violated.
- **Additional** means that the offsite project is not otherwise required by law, regulation, or legally binding mandate, and none of the offsite project's GHG emissions reductions would otherwise occur. In other words, an offsite project activity is additional if it can be demonstrated that the activity would result in emissions reductions or removals exceeding what would be achieved in the absence of the incentive provided by the proposed project and the 2045 CAP CEQA Streamlining Checklist. Additionality is an important characteristic the Offsite Program because it indicates that the GHG reductions represent a net environmental benefit and a real reduction of GHG emissions and can thus be used to offset a project's new GHG emissions.

Proposed Process

If an applicant selects to use the Offsite Program as an alternative GHG emissions reduction measure beyond those described in Table F-1, a specific process must be followed. The process will consider the following topics, which are subject to modification by the County in the forthcoming Offsite Program.

Quantification: Project applicants shall provide evidence to the County showing that the offsite project(s) proposed achieve the amount of GHG emissions reductions required. Examples of

²² In general, uncertainty should be accounted for by using conservative assumptions and/or parameter values that tend to underestimate, rather than overestimate, total GHG emissions reductions.

²³ Generally, third-party verification includes a review of all documentation, monitoring data, and procedures used to estimate GHG reductions, and culminate in the verification body's issuance of a report and statement that identifies the quantity of GHG reductions that can be issued to the offsite project. As part of the report and statement, the independent third party verifies that the offsite project has adhered to the pertinent protocol or methodology, to confirm that the offsite project's GHG reductions are real, permanent, quantifiable, enforceable, and additional.

such evidence include applicable methodologies associated with the GHG emissions reductions, quantification calculations, and supporting documentation.

Standards: Project applicants must demonstrate, with substantial evidence, that all six of the offsite project standards are met: *real, permanent, quantifiable, verifiable, enforceable, and additional*.

Enforcement: Project applicants shall obtain all necessary permits and approvals for implementation of the offsite project implementation and such materials shall be submitted to the County for review and approval before project approval.

Timing: Project applicants shall submit documentation to the County identifying the quantity of GHG emissions reductions required by the offsite project over a specific time frame to be identified in the Offsite Program (e.g., before project approval or permit issuance, over the course of buildout of the project).

Monitoring: Project applicants shall submit regular reports documenting the offsite project's achieved GHG emissions reductions over a specified time period (such as the previous or current calendar year).

Example Offsite Projects

- **Local building electrification programs:** Programs that target existing residential and commercial buildings in the project's vicinity for electrification, provided that such electrification actions are not already required by law or regulation, County building performance standards, or reach code requirements. For example, replacing a natural gas-fired heating, ventilation, and air conditioning system with an electric heat pump or replacing a gas stove with an induction cooktop.
- **Off-site EV chargers:** Programs that install EV charging stations, provided that such installations are not already required by law or regulation, or County reach code requirements and the forthcoming Zero Emission Vehicle Master Plan (Measure T6). For example, funding or directly installing EV chargers in multi-unit dwellings in disadvantaged or low-income areas, public locations (schools, libraries, city centers), workplaces, and key destinations (e.g., parks, recreation areas, sports arenas).
- **Local building solar programs:** Programs that target existing residential and commercial buildings in the project's vicinity for rooftop solar photovoltaic installations, provided that such installations are not already required by law or regulation, County building performance standards, or reach code requirements. For example, funding or directly installing rooftop solar installations or community solar systems.
- **Energy storage and microgrids:** Funding for or direct implementation of a microgrid to balance generation from non-controllable renewable power sources, such as solar, with distributed, controllable generation, such as natural gas-fueled combustion turbines; or a strategically deployed battery storage system to make the grid more flexible by unlocking renewable energy and replacing fossil fuel-generated electricity, especially during peak hours. Such programs would be allowed provided they are not already required by law or regulation, County building performance standards, or reach code requirements.
- **Truck and bus electrification programs:** Funding for the purchase of zero-emission vehicle trucks and buses to replace existing fossil fuel-powered trucks and buses;

coordination with local transportation agencies and school districts and replacement of diesel- or gasoline-fueled buses with less-polluting technologies such as compressed natural gas, electric, hybrid-electric, fuel cell, or other commercially available technologies. Such programs would be allowed provided they are not already required by law or regulation, County building performance standards, or reach code requirements.

- **Hydrogen fuel:** Funding for or programs that provide renewable hydrogen fueling stations to nearby truck fleets, such as at logistics warehouses, or other uses of renewable hydrogen fuel as a replacement for fossil fuels. Such programs would be allowed provided they are not already required by law or regulation, County building performance standards, or reach code requirements.

Environmental Impacts Pursuant to CEQA

Project applicants' CEQA documents would be required to disclose the impacts of any offsite projects that are proposed for funding or implementation. The Final PEIR for the 2045 CAP evaluates the potential environmental impacts of the 2045 CAP's measures and actions. For any offsite projects implemented via this program, then, to the extent that such projects include types of activities similar to those contemplated by the 2045 CAP's measures and actions, the resulting environmental impacts would be expected to be similar to those disclosed in the Final PEIR. Project applicants' CEQA documents may rely on the Final PEIR impact analysis for an offsite project similar to those contemplated by the 2045 CAP, unless a specific offsite project causes a new or substantially more severe impact for that project type not addressed in the Final PEIR.

Next Steps and Additional Guidance

This section represents a *framework* for the Offsite Program. The actual Offsite Program will be developed separately after the 2045 CAP is formally adopted and the Final PEIR is certified. Once the formal Offsite Program is developed, project applicants may use it to demonstrate compliance with the CEQA streamlining requirements as indicated above.

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APPENDIX G

Funding Sources

Table G-1 provides a list of potential funding sources for implementing the *2045 Los Angeles County Climate Action Plan* (2045 CAP). Programs and funding sources for implementing greenhouse gas (GHG) emissions reduction programs are developing rapidly and may change substantially from year to year. These include but not limited to the various grant programs that fall under the umbrella of [California Climate Investments](#) (funded from cap-and-trade revenues), and organizations like Southern California Regional Energy Network (SoCalREN) that provide financial assistance for energy efficiency improvements to residents, businesses, and public agencies.

The State of California offers a [Funding Wizard](#) that let users search for grants and other funding sources, using keywords and sector-based searches (e.g., transportation, energy, solid waste, urban greening, local agriculture, urban development, waste management, and water). A similar resource is the [UpLift Resource Finder](#), which provides a searchable database of funding opportunities available to individuals, community groups, and local governments that are oriented toward benefits to disadvantaged communities. UpLiftCA was created by The Greenlining Institute in partnership with the California Climate Equity Coalition, comprising the Asian Pacific Environmental Network, Coalition for Clean Air, The Greenlining Institute, Public Advocates, and SCOPE.

Table G-1: Potential Funding Sources to Support CAP Implementation

PROGRAM	DESCRIPTION
Federal Programs	
Carbon Dioxide Transportation Infrastructure Finance and Innovation (CIFIA) Program	Administered by the U.S. Department of Energy, the CIFIA program extends loans and loan guarantees to support projects that involve the delivery of infrastructure (i.e., pipeline, shipping, rail, or other infrastructure) and associated equipment for the transportation of carbon dioxide. Eligible CIFIA projects must have project costs in excess of \$100 million, and while project proposals must be submitted by a public entity, contracts are with private entities through public-private partnership arrangements.
Energy Efficient Mortgages	The Federal Housing Administration (FHA) offers an Energy Efficient Mortgage (EEM) Loan program that helps current or future homeowners save money on their utility bills by enabling borrowers who might not otherwise qualify for conventional loans on affordable terms to finance energy efficient improvements with their FHA mortgage. Qualified homebuyers or homeowners are automatically pre-approved for an additional 5–15% of their approved loan to do energy-efficient repairs to their homes without adding to their debt-to-income ratios. The EEM program recognizes that an energy-efficient home will have lower operating costs, making it more affordable for the homeowner.
ENERGY STAR® Portfolio Manager®	Portfolio Manager is a free tool supported by U.S. EPA that measures a building's energy performance and compares it to other similar buildings. It allows building owners and managers to track energy use and verify improvements. Approximately 40% of U.S. commercial building space is benchmarked in Portfolio Manager—making it the industry-leading benchmarking tool.
Federal Infrastructure Investment and Jobs Act	<p>The Federal Infrastructure Investment and Jobs Act, passed in 2021, authorizes approximately \$550 billion in new federal investment in America's transportation, communication, and water infrastructure, with much of the funding geared toward the clean energy transition and to increasing resilience to climate change. The legislation includes the following:</p> <ul style="list-style-type: none"> • \$39 billion of new investment to modernize transit and improve accessibility for the elderly and people with disabilities. • \$7.5 billion to build a national network of electric vehicle chargers. • \$73 billion for power infrastructure and the clean energy transmission. • \$110 billion for roads, bridges, and other major projects. • \$11 billion in transportation safety programs. • \$39 billion in transit modernization and improved accessibility.
Federal Solar Investment Tax Credit	The federal residential solar energy credit is a tax credit that can be claimed on federal income taxes for a percentage of the cost of a solar PV system. The system must be placed in service during the tax year and generate electricity for a home located in the United States. In December 2020, Congress passed an extension of the investment tax credit, which provides a 26% tax credit for systems installed in 2020–2022 and 22% for systems installed in 2023. (Systems installed before December 31, 2019, were eligible for a 30% tax credit.) The tax credit expires starting in 2024 unless Congress renews it.
Federal Inflation Reduction Act	<p>The Inflation Reduction Act, signed into law in August 2022, includes nearly \$400 billion in climate-related funding and nearly \$370 billion in investments in disadvantaged communities, prioritizing projects that repurpose retired fossil fuel infrastructure and employ displaced workers. The Inflation Reduction Act builds on the initial climate funding opportunities passed into law in the Infrastructure Investment and Jobs Act to support projects across EV charging, power infrastructure, and climate resilience. This law includes the following:</p> <ul style="list-style-type: none"> • Energy Cost Investments: <ul style="list-style-type: none"> ○ \$9 billion in consumer home energy rebate programs, focused on low-income consumers, to electrify home appliances and for energy efficient retrofits. ○ 10 years of consumer tax credits to make homes energy efficient and run on clean energy. ○ A \$4,000 consumer tax credit for lower/middle-income individuals to buy used clean vehicles, and an up to \$7,500 tax credit to buy new clean vehicles. ○ \$1 billion grant program to make affordable housing more energy efficient.

PROGRAM	DESCRIPTION
	<ul style="list-style-type: none"> American Energy Security and Domestic Manufacturing: <ul style="list-style-type: none"> Production tax credits to accelerate U.S. manufacturing of solar panels, wind turbines, batteries, and critical minerals processing, estimated to invest \$30 billion. \$10 billion investment tax credit to build clean technology manufacturing facilities. \$500 million in the Defense Production Act for heat pumps and critical minerals processing. \$2 billion in grants to retool existing auto manufacturing facilities to manufacture clean vehicles. Up to \$20 billion in loans to build new clean vehicle manufacturing facilities. \$2 billion for National Labs to accelerate breakthrough energy research. Economy Decarbonization: <ul style="list-style-type: none"> Tax credits for clean sources of electricity and energy storage, and approximately \$30 billion in targeted grant and loan programs for states and electric utilities to accelerate the transition to clean electricity. Tax credits and grants for clean fuels and clean commercial vehicles to reduce emissions from all parts of the transportation sector (see “Electric Vehicles Tax Credits [Inflation Reduction Act of 2022]”). Grants and tax credits to reduce emissions from industrial manufacturing processes, including almost \$6 billion for a new Advanced Industrial Facilities Deployment Program to reduce emissions from the largest industrial emitters. More than \$9 billion for federal procurement of American-made clean technologies, including \$3 billion for the U.S. Postal Service to purchase zero-emission vehicles. A \$27 billion clean energy technology accelerator to support deployment of technologies to reduce emissions, especially in disadvantaged communities. A methane emissions reduction program to reduce leaks from the production and distribution of natural gas. Environmental Justice: <ul style="list-style-type: none"> \$3 billion for environmental and climate justice block grants to invest in community-led projects in disadvantaged communities and community capacity building centers to address disproportionate impacts related to pollution and climate change. \$3 billion for neighborhood access and equity grants to reconnect communities divided by existing infrastructure barriers, mitigate negative impacts of transportation facilities or construction projects on disadvantaged or underserved communities, and support equitable transportation planning and community engagement activities. \$3 billion for grants to reduce air pollution at ports to support the purchase and installation of zero-emission equipment and technology at ports. \$1 billion for clean heavy-duty vehicles, like school and transit buses and garbage trucks. Farmers, Forestland Owners, and Resilient Rural Communities: <ul style="list-style-type: none"> More than \$20 billion to support climate-smart agriculture practices. \$5 billion in grants to support healthy, fire-resilient forests, forest conservation, and urban tree planting. Tax credits and grants to support the domestic production of biofuels, and to build the infrastructure needed for sustainable aviation fuel and other biofuels. \$2.6 billion in grants to conserve and restore coastal habitats and protect communities that depend on those habitats.
Renewable Electricity Production Tax Credit	<p>The renewable electricity production tax credit is a per-kWh federal tax credit included under Section 45 of the U.S. tax code for electricity generated by qualified renewable energy resources. It provides a corporate tax credit of 1.3 cents/kWh for electricity generated from landfill gas, open-loop biomass, municipal solid waste resources, qualified hydroelectric, and marine and hydrokinetic (150 kilowatts or larger). Electricity generation from wind, closed-loop biomass, and geothermal resources results in a corporate tax credit of as much as 2.5 cents/kWh.</p>
Low-Income Solar and Wind Investment Tax Credit	<p>This investment tax credit is currently a 30% federal tax credit claimed against the tax liability of residential (under Section 25D) and commercial and utility (under Section 48) investors in solar energy property. The Section 25D residential investment tax credit allows homeowners to apply the credit to their personal income taxes. This credit is used when homeowners purchase solar systems and have them installed on their homes. In the case of the Section 48 credit, the business that installs, develops, and/or finances the project claims the credit.</p>

PROGRAM	DESCRIPTION
Greenhouse Gas Reduction Fund	<p>The Inflation Reduction Act amended the Clean Air Act to create a new program: the Greenhouse Gas Reduction Fund. This first-of-its-kind program will provide competitive grants to mobilize financing and leverage private capital for clean energy and climate projects that reduce GHG emissions—with an emphasis on projects that benefit low-income and disadvantaged communities—and further the Biden-Harris Administration's commitment to environmental justice. The Greenhouse Gas Reduction Fund provides \$27 billion to U.S. EPA for expenditure until September 30, 2024. This includes:</p> <ul style="list-style-type: none"> • \$7 billion for competitive grants to enable low-income and disadvantaged communities to deploy or benefit from zero-emission technologies, including distributed technologies on residential rooftops; • Nearly \$12 billion for competitive grants to eligible entities to provide financial and technical assistance to projects that reduce or avoid GHG emissions; and • \$8 billion for competitive grants to eligible entities to provide financial and technical assistance to projects that reduce or avoid GHG emissions in low-income and disadvantaged communities.
Energy-Efficient Commercial Buildings Tax Deduction	<p>The Energy-Efficient Commercial Buildings Tax Deduction incentivizes designers to meet or exceed an agency's energy reduction requirements for new and existing buildings. The Energy Policy Act of 2005 allows building owners to receive a tax deduction (codified in U.S. Code Title 26, Section 179D) for expenses incurred for qualified energy-efficient building investments. In government-owned buildings, the government may allocate this deduction to the person(s) primarily responsible for designing the improvements. The deduction may be taken in the year the energy-efficient improvements are placed in service.</p>
Reconnecting Communities Pilot Program—Planning Grants and Capital Construction Grants	<p>The Bipartisan Infrastructure Law established the new Reconnecting Communities Pilot discretionary grant program, funded with \$1 billion over the next 5 years. It is the first-ever federal program dedicated to reconnecting communities that were previously cut off from economic opportunities by transportation infrastructure. Funding supports planning grants, capital construction grants, and technical assistance to restore community connectivity through the removal, retrofit, mitigation, or replacement of eligible transportation infrastructure facilities.</p>
Resilient and Efficient Codes Implementation	<p>\$225 million for the Infrastructure Investment and Jobs Act to advance state and local jurisdiction efficiency and resilience of building energy codes, as well as provide long-term sustainability of measures and savings, and address equity, energy, environmental justice, and resilience priorities. Funding is appropriated for “eligible entities to enable sustained cost-effective implementation of updated building energy codes” through a competitive grant process over five years (Fiscal Years 2022 through 2026). Awardees eligible for this funding must include a relevant state agency, and priority will be given to teams that include strategic partnerships, such as a local building code agency, codes and standards developers, associations of builders and design and construction professionals, and many others. Projects must be tied to an updated building energy code, which includes any amendment or code update resulting in increased energy efficiency as compared to the previously adopted code.</p>
Low Income Home Energy Assistance Program (LIHEAP)	<p>LIHEAP is a federal program administered by the U.S. Department of Health and Human Services that provides assistance to eligible low-income households to manage and meet their immediate home heating and/or cooling needs. LIHEAP offers several services to help low-income households meet their home energy needs:</p> <ul style="list-style-type: none"> • The Home Energy Assistance Program, which provides one-time financial assistance to help balance an eligible household's utility bill. • The Energy Crisis Intervention Program, which provides assistance to low-income households that are in a crisis situation, such as households receiving a 24- to 48-hour disconnect notice or service termination by their utility company, or households facing an energy-related crisis that could be deemed potentially life-threatening, such as a combustible appliance. • LIHEAP Weatherization, which provides free energy efficiency upgrades to lower monthly utility bills and improve household health and safety. • Energy budget counseling, and education on basic energy efficiency practices and instruction on the proper use and maintenance of installed weatherization measures.
Pollution Prevention (P2) Grant Program	<p>P2 grants provide technical assistance to businesses to help them develop and adopt source reduction practices (also known as “pollution prevention” or “P2”). “P2” means reducing or eliminating pollutants from entering any waste stream or otherwise released into the environment prior to recycling, treatment, or disposal.</p>

PROGRAM	DESCRIPTION
Source Reduction Assistance Grant Program	Source reduction assistance grants can support research, experiments, surveys, demonstration projects, education, and training related to source reduction approaches, which is also known as “pollution prevention” or “P2.”
Justice40 Investments	Executive Order 14008, Tackling the Climate Crisis at Home and Abroad, established the Justice40 Initiative, which directs 40% of the overall benefits of certain federal investments—including investments in clean energy and energy efficiency; clean transit; affordable and sustainable housing; training and workforce development; the remediation and reduction of legacy pollution; and the development of clean water infrastructure—to flow to disadvantaged communities. Through the President’s Inflation Reduction Act, Bipartisan Infrastructure Law, and the American Rescue Plan, federal agencies are making historic levels of investment to advance environmental justice.
Electric Vehicles Tax Credits (Inflation Reduction Act of 2022)	<p>The Inflation Reduction Act of 2022 extends tax credits for EVs and establishes new tax credits for used EVs and commercial EVs:</p> <ul style="list-style-type: none"> • Light Duty EV Tax Credit: Up to \$7,500 to switch to an EV, extended through 2032. • Used EV Tax Credit: For the first time, used EVs will be eligible for federal tax credits of up to \$4,000 or 30% of the sales price, whichever is lower. The sales price must be less than \$25,000 and the vehicle must be at least two years old. • Commercial EV and Fuel Cell EV Tax Credit: New tax credit available to businesses, up to 15% for plug-in hybrid EVs and up to 30% for EVs and fuel cell EVs. As of December 2022, the credit extends to commercial and tax-exempt entities, making government entities eligible to claim the credit. The credit is up to \$7,500 for vehicles under 14,000 pounds and up to \$40,000 for all other vehicles. • EV Charging Equipment Tax Credit: Federal tax credit on charging equipment in low-income or non-urban areas that has been extended through 2032. For individual/residential uses, the tax credit remains unchanged at 30%, up to \$1,000. For commercial uses, the tax credit is 6%, with a maximum credit of \$100,000 per unit. • Clean Heavy-Duty Vehicles: \$1 billion allocated to replace Class 6 and 7 heavy-duty vehicles with clean EVs. These rebates can be used for up to 100% of the costs for vehicles, infrastructure, training, and planning and technical activities to support electrification. • Diesel Emissions Reduction Act Program: \$60 million to fund grants and rebates that protect human health and improve air quality by reducing harmful emissions from diesel engines. • Domestic Manufacturing Conversion Grants: \$2 billion in cost-shared grants for domestic production of efficient hybrid, plug-in electric hybrid, plug-in electric drive, and hydrogen fuel cell EVs. • Advanced Technology Vehicle Manufacturing Program: \$3 billion to originate, underwrite, and service loans to eligible automotive manufacturers and component manufacturers to finance the cost of re-equipping, expanding, or establishing manufacturing facilities in the U.S. to produce Advanced Technology Vehicles and qualifying components. • Advanced Manufacturing Production Credit: A long-term extension of this tax credit for investments in manufacturing facilities for clean energy technologies.
Moving Ahead for Progress in the 21st Century (MAP-21)	Federal funding through the MAP-21 program is administered through the state and regional governments. MAP-21 funding is administered through the California Department of Transportation, metropolitan planning organizations (the Southern California Association of Governments in Southern California), and regional transportation planning agencies (the Riverside County Transportation Commission in Riverside County). Most of the funding programs are transportation versus recreation oriented, with an emphasis on reducing auto trips and providing an intermodal connection. In most cases, MAP-21 provides matching grants of 50–100%.
Safe Routes to Schools	Safe Routes to Schools is an international movement focused on increasing the number of children who walk or bike to school by funding projects that remove barriers to doing so. These barriers include a lack of infrastructure and non-infrastructure projects, safety, and limited programs that promote walking and bicycling. In California, separate Safe Routes to School programs are available at both the state and federal levels, and both programs fund qualifying infrastructure projects.

PROGRAM	DESCRIPTION
U.S. Department of Energy (DOE)	<p>The federal government, including DOE, provides grants and other financial incentives to local governments for renewable energy installations and alternative fuel vehicle and fueling infrastructure. Information regarding programs is available at http://www.grants.gov.</p> <p>DOE's Zero-Emission Transit Bus Tax Exemption exempts zero-emission transit buses from state sales and use taxes when the buses are sold to public agencies in California. Through the Hybrid and Zero Emission Truck and Bus Voucher Incentive Project and Low Oxides of Nitrogen (NOx) Engine Incentives, CARB provides vouchers to eligible fleets to reduce the incremental cost of qualified electric, hybrid, or natural gas trucks and buses at the time of purchase. Vouchers are available on a first-come, first-served basis.</p> <p>The DOE Loan Programs Office provides loan guarantees for innovative clean energy projects, fossil projects, nuclear projects, and energy infrastructure reinvestment projects under the Title 17 Innovative Clean Energy Loan Guarantee Program, authorized by the Energy Policy Act of 2005. Title 17 helps eliminate gaps in commercial financing for energy projects in the United States that utilize innovative technology to reduce, avoid, or sequester greenhouse gas emissions. Projects for funding include the following:</p> <ul style="list-style-type: none"> • <i>Renewable Energy and Efficiency Energy projects</i> finance catalytic, replicable, and market-ready renewable energy and efficient energy technologies with \$4.5 billion of available loan guarantees. Technology areas of interest include Advanced Grid Integration & Storage; Drop-In Biofuels; Waste-to-Energy; Enhancement of Existing Facilities; and Efficiency Improvements. • <i>Advanced Fossil Energy projects</i> have the potential to reduce carbon emissions in hard-to-decarbonize sectors. Eligible projects can utilize any fossil fuel and may come from across the spectrum of production and use, including resource development, energy generation, and end use. The four technology areas of interest are Advanced Resource Development, Carbon Capture, Low-Carbon Power Systems, and Efficiency Improvements. • <i>The Carbon Dioxide Transportation Infrastructure program</i> offers access to capital for large-capacity, common-carrier CO₂ transport projects (e.g., pipelines, rail, shipping, and other transport methods).
U.S. Department of Housing and Urban Development	<p>The Home Improvement Program supports the implementation of energy efficient upgrades to qualifying low-to-moderate income households in owner-occupied single-family homes. The program is funded by the U.S. Department of Housing and Urban Development through allocation of the HOME Investment Partnerships Program formula grants.</p>
USDA Supplemental Nutrition Assistance Program-Education (SNAP-Ed)	<p>SNAP-Ed is a federally funded grant program that supports evidence-based nutrition education and obesity prevention interventions and projects for persons eligible for SNAP through complementary direct education, multi-level interventions, and community and public health approaches to improve nutrition.</p>
USDA Water & Waste Disposal Loan & Grant Program	<p>This program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and stormwater drainage to households and businesses in eligible rural areas. Eligibility includes most state and local governmental entities, private nonprofits, and federally recognized tribes.</p>
WaterSense	<p>WaterSense is a voluntary partnership program sponsored by U.S. EPA and is both a label for water-efficient products and a resource for helping residents and businesses save water.</p>
State Programs	
CAL FIRE	<p>The CAL FIRE Urban and Community Forestry Program focuses on the use of trees and associated vegetation to provide multiple-benefit solutions and to mimic the functions of natural forests in neighborhoods. CAL FIRE offers grants to eligible applicants on an annual basis, as funding permits. These grants are designed to assist communities in creating or implementing multi-benefit projects with a focus on GHG emissions and providing benefits to disadvantaged communities.</p> <p>The Urban and Community Forestry Grant is provided to communities and projects that achieve multiple objectives for community protection, including vegetation management, fire risk reduction, GHG reductions, and habitat improvement.</p>

PROGRAM	DESCRIPTION
California Air Resources Board (CARB)	<p>CARB offers several grants, incentives, and credits programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program.</p> <ul style="list-style-type: none"> The California Vehicle Rebate Program provides up to \$7,000 for recipients to purchase or lease a new plug-in hybrid EV, battery EV, or fuel cell EV. The program prioritizes low-income recipients. The Car Sharing and Mobility Options Program provides funding for bikeshare options in low-income areas. The Carl Moyer Program provides funding to replace older heavy-duty diesel vehicles and equipment with cleaner technologies, primarily in environmental justice and low-income communities. Clean Mobility Options Voucher Pilot Program funds zero-emission mobility projects such as carsharing, bikesharing, vanpooling, ride-on-demand services, and innovative transit services in disadvantaged communities. The Bus Replacement Grant Program offers grants for the purchase of new zero-emission buses to replace old gasoline, diesel, compressed natural gas, or propane buses. The Hybrid and Zero Emission Truck and Bus Voucher Incentive Project accelerates commercialization by providing point-of-sale vouchers to make advanced vehicles more affordable. The Clean Vehicle Assistance Program provides grants and affordable financing to help California residents with gross household incomes less than or equal to 400% of the federal poverty level to purchase a new or used hybrid vehicle or EV. The Clean Cars 4 All Program (formerly known as the Enhanced Fleet Modernization Plus-Up Program) helps get lower-income consumers into cleaner technology vehicles by retiring their older, higher-polluting vehicles and upgrading to cleaner vehicles. Participants also have the option to replace their older vehicles for alternative mobility options such as public transit passes or electric bicycles. The Clean Off-Road Equipment Voucher Incentive Project promotes the purchase of clean technology over internal combustion options, targeting commercial-ready off-road products that have not yet achieved a significant market foothold. The \$1 billion Proposition 1B Goods Movement Emission Reduction Program is a partnership between CARB and local agencies, air districts, and seaports to quickly reduce air pollutant emissions and health risks from freight movement along California's trade corridors. The Lower-Emission School Bus Program provides funds to purchase new buses to replace old, high-emitting public school buses. The Air Quality Improvement Program (AB 118) is a voluntary incentive program administered by CARB to fund clean vehicle and equipment projects, research on biofuels production, and the air quality impacts of alternative fuels, and workforce training. CARB provides the Low Carbon Transportation Investments and Air Quality Improvement Program which provides mobile source incentives to reduce GHG, criteria pollutant, and toxic air contaminant emissions through the deployment of advanced technology and clean transportation in the light-duty and heavy-duty sectors.
California Climate Investments (CCI)	<p>CCI uses proceeds from the cap-and-trade program to facilitate comprehensive and coordinated investments throughout California to further the state's climate goals. Through funding from the state's Greenhouse Gas Reduction Fund, CCI offers the following incentive programs:</p> <ul style="list-style-type: none"> The California Vehicle Rebate Program provides funding for recipients to purchase or lease a new plug-in hybrid EV, battery EV, or fuel cell EV. The Clean Vehicle Assistance Program provides grants and affordable financing to help low-income Californians purchase a new or used hybrid vehicle or EV. Various programs promote clean energy and energy efficiency.
California Department of Community Services and Development	<p>The Low Income Weatherization Program supports owners and residents to lower their utility costs, save energy, and reduce GHG emissions from multifamily properties. This program is funded by the California Department of Community Services and Development and covers approximately 30–100% of energy efficiency upgrade costs for low-income residents in disadvantaged communities. The program also provides free property assessments, design assistance, and contractor coordination.</p>

PROGRAM	DESCRIPTION
California Department of Conservation	The Multibenefit Land Repurposing Program funds groundwater sustainability projects that reduce groundwater use, repurpose irrigated agricultural land, and provide wildlife habitat. The program seeks to increase regional capacity to repurpose agricultural land to reduce reliance on groundwater while providing community health, economic well-being, water supply, habitat, and climate benefits.
California Department of Fish and Wildlife (CDFW)	<p>CDFW implements a number of programs to support green infrastructure, parks, urban forestry, and agriculture, and ultimately reduce GHG emissions:</p> <ul style="list-style-type: none"> Funding opportunities for multi-benefit ecosystem restoration and protection projects under both Proposition 1 and Proposition 68. Funding focuses on planning, implementation, and acquisition projects across multiple priorities. The Wetlands Restoration for Greenhouse Gas Reduction Program, which restores wetland ecosystems to provide essential services to California's people, wildlife, and fish. Wetlands have high carbon sequestration rates that can sequester carbon for decades. This program is part of CCI.
California Department of Motor Vehicles	California's Motor Vehicle Registration Fee Program provides funding for projects that reduce air pollution from on- and off-road vehicles. Eligible projects include purchasing alternative fueled vehicles and developing alternative fueling infrastructure. Grant funding and distribution information is available from local air districts and on the program's website.
California Department of Resources Recycling and Recovery (CalRecycle)	<p>CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams. Incorporated cities and counties in California are eligible for funds. Program funds are intended to:</p> <ul style="list-style-type: none"> Reduce, reuse, and recycle all waste; Reduce landfill disposal of organics, including food waste; Encourage development of recycled-content products and markets; and Protect public health and safety and foster environmental sustainability. <p>The Recycling Market Development Zone Program combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. This program provides attractive loans, technical assistance, and free product marketing to businesses that use materials from the waste stream to manufacture their products and are located in a zone.</p> <p>The Farm & Ranch Solid Waste Cleanup and Abatement Grant Program provides funding to help cleanup and prevent illegal dumping on "farm and/or ranch" property. Funding includes reimbursement for administrative, recycling/disposal (tires), equipment, material, and personnel costs.</p>
California Department of Transportation (Caltrans)	<p>Caltrans offers funding programs to support implementation of bicycle and pedestrian infrastructure:</p> <ul style="list-style-type: none"> The Active Transportation Program funds bike and pedestrian infrastructure projects, educational and promotional efforts, safe routes to school projects, and active transportation planning. The state awards half of the funds through a competitive grants process. Forty percent goes to metropolitan agencies to distribute and 10% goes to rural areas. At least 25% of all funds must benefit residents in disadvantaged communities. Sustainable Communities Grants are issued to encourage local and regional planning that furthers state goals related to sustainability, preservation, mobility, safety, innovation, economy, health, and social equity. The Strategic Partnerships Grants help to identify and address statewide, interregional, or regional transportation deficiencies on the state highway system in partnership with Caltrans. This program also funds transit-focused planning projects that address multimodal transportation deficiencies. Transportation Development Act Article 3 (SB 821) funding, also known as the Local Transportation Fund, is used by cities for the planning and construction of bicycle and pedestrian facilities.
California Department of Food and Agriculture (CDFA)	<p>CDFA's Alternative Manure Management Program provides financial assistance for the implementation of non-digester manure management practices to help reduce GHG emissions.</p> <p>The Fertilizer Research and Education Program funds research and education to advance the environmentally safe and agronomically sound use and handling of fertilizing materials.</p>

PROGRAM	DESCRIPTION
California Energy Commission (CEC)	<p>The CEC funds both the California Capital Access Program and the CALeVIP program, which provide incentives for installation of vehicle charging infrastructure.</p> <p>The Southern California Incentive Project, part of CALeVIP, offers rebates of up to \$70,000 per DC fast EVSE installation at new sites and 75% of total project costs, and up to \$40,000 per DC fast EVSE installation at replacement or make-ready sites. Installations in disadvantaged communities are eligible for rebates for 80% of the total project cost, up to \$80,000 per DC fast EVSE, regardless of installation site type.</p> <p>The California Capital Access Program provides small business borrowers and lenders incentives to finance the design, development, purchase, and installation of EV charging stations in California.</p> <p>The CEC's Clean Transportation Program (also known as Alternative and Renewable Fuel and Vehicle Technology Program) invests up to \$100 million annually to support innovation and accelerate the development and deployment of advanced transportation and fuel technologies.</p> <p>The CEC is also the primary funder of the state's advanced microgrid projects, and to date has dedicated \$84.5 million in matching funding to develop 20 projects across the state.</p> <p>The CEC provides loan programs through the Energy Conservation Assistance Act (ECAA) that support energy efficiency and energy generation projects.</p> <ul style="list-style-type: none"> • The ECAA-Ed program provides zero-interest-rate loans to public school districts, charter schools, county offices of education, and state special schools. • The ECAA Low-Interest Loans program provides 1%-interest loans to local governments, special districts, public colleges and universities, public care institutions, and public hospitals for energy retrofits and some new construction projects.
California Natural Resources Agency	<p>The California Natural Resources Agency offers a variety of grant and loan programs within its departments and conservancies:</p> <ul style="list-style-type: none"> • The Urban Greening Grant Program funds projects that reduce GHG emissions by sequestering carbon, decreasing energy consumption, and reducing vehicle miles traveled. • The Environmental Enhancement & Mitigation Program funds projects that contribute to mitigation of the environmental effects of transportation facilities. These include urban forestry projects designed to offset vehicular CO₂ emissions. • The Urban Green Infrastructure Program provides funding for multi-benefit green infrastructure investments in or benefiting disadvantaged or severely disadvantaged communities.
California Public Utilities Commission (CPUC)	<p>CPUC administers several programs to incentivize electrification, reduce GHG emissions, and support lower income households:</p> <ul style="list-style-type: none"> • \$200 million for the Technology and Equipment for Clean Heating and Building Initiative for Low Emissions Development programs, to cut carbon emissions in buildings and low-income households from fossil fuel combustion. • The California Solar Initiative provides incentives to low-income customers installing solar PV systems and to all utility customers installing solar water heating systems. The California Solar Initiative has a Single-family Affordable Solar Homes Program, managed by GRID Alternatives, that provides qualified low-income homeowners fixed, upfront, capacity-based incentives to help offset the upfront cost of a solar electric system. • The Self-Generation Incentive Program provides incentives to support existing, new, and emerging distributed energy resources, with rebates for qualifying distributed energy systems installed on the customer's side of the utility meter. Qualifying technologies include wind turbines, waste-heat-to-power technologies, pressure reduction turbines, internal combustion engines, microturbines, gas turbines, fuel cells, and advanced energy storage systems. • A \$1 billion investment has been made over five years for the statewide Transportation Electrification Program to help accelerate EV adoption, with 70% of the funds to go toward charging for medium- and heavy-duty vehicles and 30% to go toward light-duty charging at or near multiunit dwellings. The program offers rebates for customer-side ("behind-the-meter") EV infrastructure investments at commercial, industrial, and residential sites beginning in 2025 and provides higher rebates for projects in underserved, disadvantaged, and tribal communities. • The California Alternate Rates for Energy (CARE) program offers up to 35% discounts on electric bills and a 20% discount on natural gas bills for qualifying lower-income households. • The Family Electric Rate Assistance Program offers an 18% discount on electricity bills for households whose income slightly exceeds CARE allowances.

PROGRAM	DESCRIPTION
California State Board of Equalization	Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for qualifying new solar installations, meaning that property taxes will not increase for individuals if they install solar on their property. This tax exclusion was set to expire in 2016, but is now extended through January 1, 2025.
California Department of Housing and Community Development (HCD) Local Early Action Planning (LEAP) Grant	<p>The LEAP Program provides over-the-counter grants complemented by technical assistance to local governments for the preparation and adoption of planning documents and process improvements that:</p> <ul style="list-style-type: none"> • Accelerate housing production. • Facilitate compliance to implement the sixth-cycle Regional Housing Needs Assessment. <p>Increasing the availability of affordable homes statewide is critical to bettering the quality of life of all Californians and to ending homelessness. In the 2019–20 Budget Act, Governor Gavin Newsom allocated \$250 million for all regions, cities, and counties to do their part by prioritizing planning activities that accelerate housing production to meet the identified needs of every community. With this allocation, HCD established the LEAP Program with \$119 million for cities and counties. LEAP provides one-time grant funding to cities and counties to update their planning documents and implement process improvements that will facilitate the acceleration of housing production and help local governments prepare for their sixth-cycle Regional Housing Needs Assessment much like the SB 2 Planning Grants.</p>
California State Transportation Agency	<p>The Transit and Intercity Rail Capital Program was created by SB 862 to provide grants from the state's Greenhouse Gas Reduction Fund to fund transformative capital improvements that will modernize California's intercity, commuter, and urban rail systems, and bus and ferry transit systems. The aim is to reduce GHG emissions by reducing congestion and vehicle miles traveled throughout California.</p> <p>The 2023 program includes approximately \$1.3 billion for seven projects in the six-county SCAG region, to improve regional transportation and reduce GHG emissions, congestion, and vehicle miles traveled. The funding includes \$600 million for the East San Fernando Valley Transit Corridor, part of the Los Angeles County Metropolitan Transportation Authority transit network.</p>
Energy Upgrade California	Energy Upgrade California is a statewide program that educates California residents about opportunities to manage energy use, identify clean-energy options, and find rebates and incentives to increase energy-efficiency. The program is supported by CPUC, the CEC, various utilities, regional energy networks, community choice aggregations, businesses, nonprofits, and local governments. The Gateway Cities Energy Leader Partnership offers assistance in understanding this program and finding contractors that can assess and complete projects that are funding-eligible. Funding is provided by investor-owned energy utility customers under the auspices of CPUC and the CEC.
Strategic Growth Council (SGC)	<p>SGC's Affordable Housing and Sustainable Communities Program funds land-use, housing, transportation, and land preservation projects to support infill and compact development that reduces GHG emissions. Funding for the program is provided by the state's Greenhouse Gas Reduction Fund.</p> <p>The Transformative Climate Communities Program funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most disadvantaged communities. Funded by California's Cap-and-Trade Program, the Transformative Climate Communities Program empowers the communities most affected by pollution to choose their own goals, strategies, and projects to enact transformational change—all with data-driven milestones and measurable outcomes.</p> <p>SGC's Urban Greening Grant Program funds urban greening projects and plans that reduce energy consumption, conserve water, improve air and water quality, and provide other community benefits. These funds assist entities in developing a master urban greening plan that will ultimately result in projects to help the state meet its environmental goals and the creation of healthy communities. These funds also assist entities to preserve, enhance, increase or establish community green areas such as urban forests, open spaces, wetlands and community spaces (e.g., community gardens).</p>

PROGRAM	DESCRIPTION
Regional Programs	
Clean Power Alliance (CPA)	<p>The CPA is the community choice aggregation serving local businesses and residents in greater Los Angeles County. CPA offers a variety of programs and funding sources geared toward local renewable energy generation and storage as well as demand response management. Since October 2022, customers in unincorporated Los Angeles County are receiving 100% renewable energy – wind, solar, geothermal – from CPA, compared to the 50% clean energy previously received. And most of the renewable energy is produced in California.</p> <p>The Powershare program offers income-qualified customers in under-resourced communities with discounted 100% renewable energy.</p>
Property Assessed Clean Energy (PACE) programs	<p>PACE programs offer financing of energy-efficient upgrades for different types of residential, commercial, and industrial properties. With the PACE framework, local governments provide initial funds for the installation of energy-efficient projects and renewable-energy systems. The property owner then repays the loan over a period of time. The Home Energy Renovation Opportunity program is an energy-efficient financing program designed specifically for residential upgrades where the loan becomes part of the property assessment and is repaid through property taxes.</p>
Proposition A Local Return transit fund	<p>Approved by voters in November 1980, Proposition A is a half-cent sales tax dedicated to transportation funding and was the first of its kind to address transportation challenges in Los Angeles County. Proposition A has funded transportation projects, improved bus service, initiated plans for a rail system that continues to be expanded today, and helped subsidize fares. The Proposition A expenditure plan includes three categories: 25% to Local Return programs, 35% to rail development, and 40% to discretionary.</p>
South Coast Air Quality Management District (SCAQMD)	<p>For the year 2018, AB 617 provided SCAQMD with \$10.7 million in funding to develop community emissions reduction plans, conduct community monitoring and analysis, and implement best available retrofit control technology for facilities in the cap-and-trade program. With the passage of AB 617, SCAQMD expects to receive \$107.5 million in new funding for eligible projects under the Carl Moyer Program, to replace older heavy-duty diesel vehicles and equipment with cleaner technologies, primarily in environmental justice and low-income communities.</p> <p>SCAQMD and the Mobile Source Air Pollution Reduction Review Committee provide Clean Transportation Funding to support a variety of emissions reduction programs including the Replace Your Ride Program and the Residential Electric Vehicle Charging Incentive Program. SCAQMD provides a variety of financial incentives to reduce emissions through the Vehicle and Engine Upgrade Programs, which include grants for incremental funding, subsidies, or vouchers, with many designed to promote voluntary introduction of new technologies on an accelerated schedule.</p> <ul style="list-style-type: none"> • The Heavy-Duty Zero Emission Vehicle Replacement Grant offers grants for the replacement or repower of eligible Class 7 and 8 heavy-duty vehicles with low NOx vehicles. • The Goods Movement Emission Reduction Program (Proposition 1B Program) provides funding for projects that reduce emissions from goods movement operations near ports, railyards, distribution centers, and roads with high truck traffic. <p>SCAQMD offers multiple rebates to incentivize installation of alternative fuel infrastructure and energy efficient upgrades, and improve air quality within the region.</p> <ul style="list-style-type: none"> • The Clean Fuels Fund provides grants for the installation of alternative fuel infrastructure, expediting the transition of gasoline- and diesel-powered vehicles to those that operate on cleaner burning alternatives such as natural gas. • The Electric Lawn Mower Rebate Program offsets the costs of purchasing an electric lawn mower. Participants can purchase a new electric lawn mower, turn in their old gasoline lawn mower to an approved dismantler for permanent destruction, and then receive a rebate based on the purchase price of the new electric lawn mower. • The CLEANair Furnace Rebate Program, implemented by the Electric & Gas Industries Association, provides rebates to residents who purchase and install a compliant furnace that meets the SCAQMD Rule 1111 NOx emission limit.

PROGRAM	DESCRIPTION
Southern California Association of Governments (SCAG)	<p>SCAG provides a variety of services to assist local jurisdictions with implementing bicycle infrastructure and to encourage the community to use active modes of transportation.</p> <ul style="list-style-type: none"> The Sustainable Communities Program provides direct technical assistance to jurisdictions to complete planning and policy efforts that enable implementation of the RTP/SCS. SCAG's Go Human program is a community outreach and advertising campaign with the goals of reducing traffic collisions in Southern California and encouraging people to walk and bike more. This program is funded by grants from the California Office of Traffic Safety, the California Active Transportation Program, the Mobile Source Air Pollution Reduction Review Committee, and other local sponsors. The program encourages active transportation through education, advocacy, information sharing, and events.
Metropolitan Water District of Southern California (MWD)	<p>SoCal Water\$mart program is a partnership between MWD and its 26 member agencies including West Basin Municipal Water District, to fund home and business rebates.</p>
Southern California Edison (SCE)	<p>SCE's Charge Ready Program assists businesses, government organizations, and property owners with deploying the infrastructure and equipment necessary to support EV charging stations at their multi-family buildings, public sector, or business locations. The program includes rebates for EVSE installation, as well as technical assistance. Rebate amounts vary, and sites located in disadvantaged communities are eligible for additional rebates.</p> <p>The Charge Ready Transit Bus pilot program, designed specifically for transit agencies, provides financial assistance for bus charging stations and supporting electrical infrastructure.</p> <p>SCE offers the following tools and resources that enable residential customers and businesses to manage costs, reduce energy usage, and get payment assistance:</p> <ul style="list-style-type: none"> The Energy Savings Assistance program is available to certain homeowners and renters who receive electric services through a residential meter and have an SCE account. For businesses, SCE offers Continuous Energy Improvement, a free consulting service. The Mobile Home Upgrade program offers no-cost energy conservation evaluations by an energy specialist to identify opportunities for energy reduction and savings on electricity bills. The program also offers energy efficiency installations and improvements and is available to mobile homes or mobile home communities that have an active SCE service account. The Direct Install Program for businesses to reduce energy costs. Under this program, businesses receive an energy efficiency evaluation and installation of energy efficient equipment including LED lights, fluorescent lighting, hi-bay lighting, refrigeration, and LED signs. SCE offers special electric vehicle Time-of-Use rate plans that offer reduced rates when customers charge during off-peak hours. SCE customers can join SCE's Green Rate or Community Renewables Program to tap into the power of the sun through new renewable energy options, without having to install their own solar panels. SCE's Home Efficiency Guide provides information regarding home energy use and conservation opportunities. The Home Efficiency Guide emphasizes the benefits of electric appliances including increased energy efficiency, energy bill reduction, improvements to indoor air quality, and overall environmental benefits.
Southern California Gas Company (SoCal Gas)/Sempra Energy	<p>SoCalGas offers programs to single-family residential, multifamily residential, and commercial customers to identify energy efficiency improvements that save money and energy. Cities can join a Local Government Partnership with SoCalGas to gain access to increased rebates and incentives, free facility audits, and assistance for community outreach/events. These programs are funded by California utility customers under the auspices of CPUC.</p> <ul style="list-style-type: none"> The Energy Savings Assistance Program provides weatherization services to low-income households served by SCE who meet the CARE program income guidelines. The Comprehensive Mobile Home Program offers no-cost energy conservation evaluations and energy efficiency installations such as low-flow showerheads and faucet aerator. The program also provides natural gas energy efficiency improvements such as duct tests and seal of heating, ventilation, and air conditioning systems. The Commercial Direct Install Program offers long-term energy savings to qualifying customers. Through this program, a trained energy efficiency representative will evaluate energy and water use to identify areas for businesses to save energy and water.

PROGRAM	DESCRIPTION
	<ul style="list-style-type: none"> The Residential Direct Install Program has no income requirements and is available to renters and homeowners living in single-family and multifamily dwellings. This no-cost program provides energy improvements to eligible customers to help make their homes more comfortable and help conserve energy, which could lead to lower utility bills. The SoCalGas Marketplace is an online tool that features incentives for energy-efficient home appliances and consumer electronics. SoCalGas offers a special residential natural gas vehicle billing rate for customers who choose this option. Refueling a natural gas vehicle at home on this rate may yield a lower refueling cost compared with using a public station.
Local Funding	
County General Fund	Annual budgeting allocations fund departmental operations for staff resources to implement programs. Programs needing funding beyond staff resources are assessed through the annual budgeting and prioritization process.
Private and Nongovernmental Support	
Community-based nonprofits	Community-based nonprofits should be considered as resources for direct and indirect support, including funding, for program activation and operations. For example, GRID Alternatives helps provide access to clean, renewable solar energy to low-income families and hands-on job training to help workers enter the solar industry.
Private investors	Private investors may provide funding to local governments. For example, energy service companies can finance the upfront investments in energy efficiency, reimbursed by the local government over a contract period. Private companies may finance solar power installations, and then recoup their investment by selling the resulting power to the building owner.
Independent Energy Purchase/Solar Services Model	Local governments can finance solar PV system purchases and installations at no upfront cost by signing a long-term power purchase agreement with a developer and agreeing to host a PV system at its facility. The developer pays for the design, construction, and installation of the system, often arranging third-party financing. The investor who provides the upfront capital and owns the project receives returns from payments from the host developer. The host's payments are at a predetermined fixed price and are assessed much like a monthly utility payment. The local government, as host, benefits from the fixed-income price payments, reduced peaked energy costs, and reduced GHG emissions, all at no upfront cost.

Abbreviations: AB = Assembly Bill; CAL FIRE = California Department of Forestry and Fire Protection; CALeVIP = California Electric Vehicle Infrastructure Project; CalRecycle = California Department of Resources Recycling and Recovery; Caltrans = California Department of Transportation; CAP = climate action plan; CARB = California Air Resources Board; CARE = California Alternate Rates for Energy; CCI = California Climate Investments; CDFA = California Department of Food and Agriculture; CDFW = California Department of Fish and Wildlife; CEC = California Energy Commission; CIFIA = Carbon Dioxide Transportation Infrastructure Finance and Innovation; CO₂ = carbon dioxide; County = County of Los Angeles government; CPA = Clean Power Alliance; CPUC = California Public Utilities Commission; DC = direct current; DOE = U.S. Department of Energy; ECAA = Energy Conservation Assistance Act; EEM = Energy Efficient Mortgage; EV = electric vehicle; EVSE = electric vehicle supply equipment; FHA = Federal Housing Administration; GHG = greenhouse gas; HCD = California Department of Housing and Community Development; kWh = kilowatt-hour; LEAP = Local Early Action Planning; LED = light-emitting diode; LiHEAP = Low Income Home Energy Assistance Program; MAP-21 = Moving Ahead for Progress in the 21st Century; MWD = Metropolitan Water District of Southern California; NO_x = oxides of nitrogen; P2 = Pollution Prevention; PACE = Property Assessed Clean Energy; PV = photovoltaic; RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy; SB = Senate Bill; SCAG = Southern California Association of Governments; SCAQMD = South Coast Air Quality Management District; SCE = Southern California Edison; SGC = Strategic Growth Council; SNAP = Supplemental Nutrition Assistance Program; SNAP-Ed = Supplemental Nutrition Assistance Program-Education; SoCalGas = Southern California Gas Company; U.S. EPA = U.S. Environmental Protection Agency; USDA = U.S. Department of Agriculture

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APPENDIX H

2022 Scoping Plan Recommendations Consistency

Table H-1 compares the *2045 Los Angeles County Climate Action Plan* with the California Air Resources Board’s recommendations for local governments contained in the *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan) (CARB, 2022). The focus of the table is on Appendix D, *Local Actions*, of the 2022 Scoping Plan. This comparison solely serves as a demonstration of how the 2045 CAP aligns with the State’s pathway to GHG emission reductions.

Reference:

California Air Resources Board (CARB), 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. Sacramento, CA. November 16, 2022.

Table H-1: Consistency of the 2045 CAP with the 2022 Scoping Plan Recommendations

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
Climate Action Plan Priority Strategies (2022 Scoping Plan Appendix D, Table 1)	
<p>Convert local government fleets to ZEVs and provide EV charging at public sites.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales: 140,000 total new public and private shared EVCS by 2045; 25,000 total new EVCS at County facilities. <ul style="list-style-type: none"> T6.2: Install EVCSs at existing buildings and right-of-way infrastructure throughout unincorporated Los Angeles County. T6.4: Install EVCSs at County facilities and properties for public, employee, and fleet use, prioritizing locations in frontline, BIPOC, and disadvantaged communities. Complete an assessment of EV charging locations, identifying gaps in publicly accessible stations for frontline, BIPOC, and disadvantaged communities. Provide EV purchase incentive information in multiple languages to frontline communities. T7: Electrify County Fleet Vehicles: 100% light-duty (LD) vehicles are ZEV by 2045; 100% ZEV bus and shuttle vehicles by 2045; all new LD purchases ZEV. <ul style="list-style-type: none"> T7.1: Electrify the County bus and shuttle vehicle fleet, and partner with transit agencies for group purchasing and siting of shared charging and/or fueling infrastructure. T7.2: Electrify light-duty County fleet vehicles. T8: Accelerate Freight Decarbonization: 95% of MD/HD vehicles are ZEV by 2045. <ul style="list-style-type: none"> T8.4: Streamline permitting of ZEV charging and fueling infrastructure for medium- and heavy-duty vehicles. T8.5: Electrify the County medium- and heavy-duty vehicle fleet. CAP Checklist: <ul style="list-style-type: none"> For all new municipal projects and facilities that include the purchase or operation of new fleet vehicles, including public transit buses and shuttles, all such fleet vehicles must be ZEVs. This includes both County-owned vehicles along with contractor or vendor fleet vehicles. The project must incorporate zero emission vehicle (ZEV) infrastructure and incentives into its design.
<p>Create a jurisdiction-specific ZEV ecosystem to support deployment of ZEVs statewide (such as building standards that exceed state building codes, permit streamlining, infrastructure siting, consumer education, preferential parking policies, and ZEV readiness plans).</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales: <ul style="list-style-type: none"> T6.1: Develop a Zero Emission Vehicle Master Plan. T6.3: Require all new development to install EVCSs through a condition of approval/ordinance. Residential development must install EVCSs; nonresidential development must install EVCSs at a percentage of total parking spaces. T8: Accelerate Freight Decarbonization: <ul style="list-style-type: none"> T8.3: Adopt Building Performance Standards for existing goods movement facilities and reach code requirements for major retrofits and renovations that require alternative

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<p>fueling infrastructure for medium- and heavy-duty vehicles. Require goods movement facilities to install alternative fueling infrastructure for medium- and heavy-duty vehicles at the point of sale.</p> <ul style="list-style-type: none"> ○ T8.4: Streamline permitting of ZEV charging and fueling infrastructure for medium- and heavy-duty vehicles. ● T9: Expand Use of Zero-Emission Technologies for Off-Road Vehicles and Equipment: 95% of off-road equipment in unincorporated Los Angeles County is ZEV by 2045; Increase the fleetwide percentage of construction, agriculture, and manufacturing equipment in the unincorporated Los Angeles County that are ZEVs to 100 percent by 2045. <ul style="list-style-type: none"> ○ T9.1: Partner with the South Coast Air Quality Management District and Antelope Valley Air Quality Management District to increase the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment. ○ T9.2: Identify types of ZEV equipment and green hydrogen equipment that are commercially available (e.g., forklifts, loaders, welders, saws, pumps, fixed cranes, air compressors, sweepers, aerial lifts, pressure washers) and require the use of these types of equipment on all new projects through an ordinance or conditions of approval. ○ T9.3: Require, to the maximum extent feasible, the use of zero-emission and near-zero-emission construction, agriculture, and manufacturing equipment for County projects. ● CAP Checklist: The project must incorporate zero emission vehicle (ZEV) infrastructure and incentives into its design.
Reduce or eliminate minimum parking standards.	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> ● T5: Limit and Remove Parking Minimums: Reduce parking stipulations to reduce parking supply and encourage transit use; Unbundle parking costs to reflect cost of parking; Implement parking pricing to encourage “Park-once” behavior. <ul style="list-style-type: none"> ○ T5.1: Implement a comprehensive parking reform strategy, which should include, but not be limited to: elimination of minimum parking requirements for all new residential units, establishment of parking maximums within one-half mile of high-quality transit stops, creation and expansion of parking benefit districts, development of planning strategies for transitioning land dedicated to parking to alternative transit and public uses, and incentives for developers to provide less than maximum allowable parking. ● CAP Checklist: Implement parking limitations.
Implement Complete Streets policies and investments, consistent with general plan circulation element requirements.	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> ● T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips: Increase bikeway miles by 300% by 2035; Implement the County Bicycle Master Plan; Complete updates to the County’s Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans every five years. <ul style="list-style-type: none"> ○ T3.1 through T3.3.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: All transit corridors will have micromobility service; Improved services and access for children, elderly, disabled, and users needing accommodations for bicycles or active transportation. <ul style="list-style-type: none"> ○ T4.1: Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit, autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles. ○ T4.4: Collaborate with Metro and other transit providers to set aside maintenance funds to ensure that public transit facilities, including stations and stops, are safe and clean to enhance the transit experience and increase ridership. ○ T4.8: Establish temporary and permanent car-free areas. ○ T4.10: Collaborate with Metro and other transit providers to ensure that all new forms of public transportation (e.g., new bus lines, new light rail service) are low- or zero-emission. • CAP Checklist: <ul style="list-style-type: none"> ○ The project must incorporate pedestrian and bicycle infrastructure into its design. ○ The project must comply with the County's TDM ordinance at the time of project approval.
<p>Increase access to public transit by increasing density of development near transit, improving transit service by increasing service frequency, creating bus priority lanes, reducing or eliminating fares, microtransit, etc.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • Strategy 2: Increase Densities and Diversity of Land Uses Near Transit. • T1: Increase Density Near High-Quality Transit Areas: Achieve a minimum of 20 dwelling units (DUs) per acre (maximum of 30 to 150 DUs per acre) for HQTAs. <ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. • T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use: By 2030, achieve a job density of 300 jobs per acre; For communities with an imbalance of jobs/housing (+ 20%), develop community plans to identify and quantify strategies for bringing below 20%. <ul style="list-style-type: none"> ○ T2.1: Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT. • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: By 2030, double transit service hours from 560,000 to 1.12 million; by 2030, install bus-only lanes and signal prioritization on all major transit thoroughfares; by 2030, ensure that 75% of unincorporated Los Angeles County residents live within one-half mile of shuttle or mobility service; etc. <ul style="list-style-type: none"> ○ T4.1: Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit, autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> ○ T4.2 through T4.4. ○ T4.6: Offer free transit passes for students, youth, seniors, people with disabilities, and low-income populations. ○ T4.7 through T4.10. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project is located within a High Quality Transit Area (HQTA), Specific Plan, or Area Plan, it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Update rezoning. ○ The project must comply with the County's TDM ordinance at the time of project approval ○ The project must comply with the County's current Transportation Impact Analysis (TIA) Guidelines.
<p>Increase public access to clean mobility options by planning for and investing in electric shuttles, bike share, car share, and walking.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales. <ul style="list-style-type: none"> ○ T6.6: Expand electric options for active transportation, such as electric scooters and e-bikes. Provide access to neighborhood electric vehicles, such as golf carts, shared EVs, and others. Develop policies and/or ordinances to expand these options. • T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips: Increase bikeway miles by 300% by 2035; Implement the County Bicycle Master Plan; Complete updates to the County's Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans every five years. <ul style="list-style-type: none"> ○ T3.1 through T3.3. • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: All transit corridors will have micromobility service; improved services and access for children, elderly, disabled, and users needing accommodations for bicycles or active transportation. <ul style="list-style-type: none"> ○ T4.1: Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit, autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles. ○ T4.8: Establish temporary and permanent car-free areas. ○ T4.10: Collaborate with Metro and other transit providers to ensure that all new forms of public transportation (e.g., new bus lines, new light rail service) are low- or zero-emission. • CAP Checklist: <ul style="list-style-type: none"> ○ The project must incorporate pedestrian and bicycle infrastructure into its design. ○ The project must incorporate zero emission vehicle (ZEV) infrastructure and incentives into its design.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
Implement parking pricing or transportation demand management pricing strategies.	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation. <ul style="list-style-type: none"> ○ T4.5: Collaborate with Metro and other transit providers to develop and implement a transportation demand management (TDM) ordinance that requires development projects to incorporate measures such as subsidized transit passes and car share. • T5: Limit and Remove Parking Minimums: Parking strategies such as parking maximums, unbundling parking, or market price parking can help reduce VMT. • CAP Checklist: The project must comply with the County's TDM ordinance at the time of project approval. This may include preferential carpool/vanpool parking, bicycle parking, and shower facilities and locker rooms; trip reduction plans; transit-supportive infrastructure development; and similar strategies.
Amend zoning or development codes to enable mixed-use, walkable, transit-oriented, and compact infill development (such as increasing the allowable density of a neighborhood).	<p>The 2045 CAP is a policy document intended to reduce community-wide GHG emissions and would support development already allowed under the General Plan's land use assumptions as identified in the Land Use Element and 2021–2029 Revised County of Los Angeles Housing Element (2021–2029 Housing Element). No changes to General Plan land use designations, zoning, land use, or specific projects are proposed as part of the 2045 CAP.</p> <p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • T1: Increase Density Near High-Quality Transit Areas. <ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. ○ T1.2: Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing. • T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use. <ul style="list-style-type: none"> ○ T2.1: Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project is located within a High Quality Transit Area (HQTA), Specific Plan, or Area Plan, it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Update rezoning. ○ The project must comply with the County's TDM ordinance at the time of project approval. ○ The project must comply with the County's current Transportation Impact Analysis (TIA) Guidelines.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>Preserve natural and working lands by implementing land use policies that guide development toward infill areas and do not convert “greenfield” land to urban uses (e.g., green belts, strategic conservation easements).</p>	<p>The 2045 CAP is a policy document intended to reduce community-wide GHG emissions and would support development already allowed under the General Plan’s land use assumptions as identified in the Land Use Element and 2021–2029 Revised County of Los Angeles Housing Element (2021–2029 Housing Element). No changes to General Plan land use designations, zoning, land use, or specific projects are proposed as part of the 2045 CAP.</p> <p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • Strategy 9: Conserve Forests and Connect Wildlands and Working Lands. • A1: Conserve Forests, Woodlands, Shrublands, Grasslands, Desert, and other Carbon-Sequestering Wildlands and Working Lands: Preserve, conserve, and restore agricultural lands, working lands, rangelands, forest lands, wetlands, and other wildlands in unincorporated Los Angeles County: Reduce the amount of natural land converted for urbanized uses: 25% by 2030 (53 hectares conserved annually), 50% by 2035 (106 hectares conserved annually), 75% by 2045 (159 hectares conserved annually); Conserve and restore natural forest land: 2,000 acres by 2030, 4,000 acres by 2035, 6,000 acres by 2045. <ul style="list-style-type: none"> ○ A1.1: Develop an open space conservation and land acquisition strategy that prioritizes wildlife connectivity to conserve native habitats for carbon sequestration. ○ A1.2: Employ ecosystem-appropriate vegetation management of wildlands based on the best available science to reduce unintended human ignitions and wildfire risk and prevent carbon loss in forest lands. Leverage tools such as the Unified Land Management Plan and the Countywide Community Wildfire Prevention Plan. • CAP Checklist: For all projects involving the preservation, conservation, and restoration of agricultural lands, working lands, rangelands, forest lands, wetlands, and other wildlands in unincorporated Los Angeles County, the project may: <ul style="list-style-type: none"> ○ Support the use of public and private land for urban and peri-urban agriculture, such as community gardens, and including urban vertical surfaces. ○ Conserve and restore natural forest lands, wetlands, and wildlands through land acquisitions and conservation easements. ○ Preserve existing agricultural and farmlands, including those mapped in unincorporated Los Angeles County as Agricultural Opportunity Areas. Expand adjoining areas to enlarge farmland area. ○ Actively manage forests to reduce wildfire risk and prevent carbon loss in forest lands.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>Adopt all-electric new construction reach codes for residential and commercial uses.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> E2: Standardize All-Electric New Development: This measure aims to electrify all applicable new buildings, while taking into consideration the varying climate, geography, infrastructure, and sole-source dependency challenges that rural communities and unique industries may face; All applicable new buildings will be all electric; Residential: 90% all-electric by 2030, 95% by 2035, and 100% by 2045; Nonresidential: 90% all-electric by 2030 (except large industry and possibly food service) 95% by 2035, and 100% by 2045. <ul style="list-style-type: none"> E2.1: Adopt an ordinance requiring all applicable new buildings to be fully electric with no natural gas hookups. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability. CAP Checklist: For projects under construction before 2030, the project must be fully electric with no natural gas infrastructure or appliances, as specified in the City's all-electric buildings ordinance, unless the project meets specific exemptions identified in the ordinance. For projects under construction after 2030, the project must be zero-net-energy and fully electric with no natural gas infrastructure or appliances, as specified in the City's ZNE ordinance, unless the project meets specific exemptions identified in the ordinance.
<p>Adopt policies and incentive programs to implement energy efficiency retrofits for existing buildings, such as weatherization, lighting upgrades, and replacing energy-intensive appliances and equipment with more efficient systems (such as Energy Star-rated equipment and equipment controllers).</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> E1: Transition Existing Buildings to All-Electric. <ul style="list-style-type: none"> E1.5: Create a comprehensive fund aggregation program to support energy efficiency, decarbonization, and resilience in new and existing affordable housing. E1.6: Create and resource an energy retrofit accelerator to provide a one-stop shop for guidance, technical support, training, and access to aggregated funds to support building owners and contractors. Target support to low-income communities and affordable housing. E4: Improve Energy Efficiency of Existing Buildings: Retrofit existing building stock to reduce overall unincorporated Los Angeles County energy use: Reduce building Energy Use Intensity below 2015 levels 20% for residential, 15% for industrial, and 25% for commercial by 2030; 25% for residential and industrial and 35% for commercial by 2035; and 50% for residential and industrial and 50% for commercial by 2045. <ul style="list-style-type: none"> E4.1: Adopt Building Performance Standards for energy efficiency in existing buildings. E4.2: Adopt an energy efficiency ordinance for existing buildings, requiring all buildings over 20,000 square feet to benchmark and report their energy use and demonstrate their pathway to efficiency. E4.3: Convert existing County-owned heat-trapping surfaces to cool or green surfaces.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> • CAP Checklist: Projects that include a retrofit, remodel, or redesign of an existing building must incorporate the following design elements: <ul style="list-style-type: none"> ○ All space heating and water heating must be electric. ○ With the exception of restaurants, all cooking appliances must be electric. ○ For restaurants, use electric cooking appliances to the maximum extent feasible. ○ Comply with all applicable Building Performance Standards. ○ Comply with all building carbon intensity limits. ○ If the project is a major renovation, achieve ZNE and/or comply with the City's ZNE ordinance.
<p>Adopt policies and incentive programs to electrify all appliances and equipment in existing buildings such as appliance rebates, existing building reach codes, or time of sale electrification ordinances.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • E1: Transition Existing Buildings to All-Electric: Electrify 80% of residential buildings and 60% of nonresidential by 2045; require ZNE for all major renovations by 2045. <ul style="list-style-type: none"> ○ E1.1: Adopt Building Performance Standards for existing buildings and reach code requirements for major retrofits and renovations that require electric water and space heating. Require buildings to retrofit natural gas water and space heating to electric water and space heating at the point of sale. ○ E1.2: Increase alternatives to natural gas uses, such as for cooking, in existing buildings. Establish carbon intensity limits for existing nonresidential and residential buildings over a certain size. ○ E1.3: Adopt a ZNE ordinance for building renovations, based on certain criteria (such as commercial facilities with 10,000 square feet of additions). Adopt ZNE Building Performance Standards for certain buildings not undergoing major renovations or retrofits. ○ E1.4: Create and resource a plan for phased electrification of County facilities. Phase out gas-powered infrastructure and appliances as they need replacement. • CAP Checklist: Projects that include a retrofit, remodel, or redesign of an existing building must incorporate the following design elements: <ul style="list-style-type: none"> ○ All space heating and water heating must be electric. ○ With the exception of restaurants, all cooking appliances must be electric. ○ For restaurants, use electric cooking appliances to the maximum extent feasible. ○ Comply with all applicable Building Performance Standards. ○ Comply with all building carbon intensity limits. ○ If the project is a major renovation, achieve ZNE and/or comply with the City's ZNE ordinance.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>Facilitate deployment of renewable energy production and distribution and energy storage on privately owned land uses (e.g., permit streamlining, information sharing).</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • ES2: Procure Zero-Carbon Electricity: 100% enrollment in zero-carbon electricity service by 2030. <ul style="list-style-type: none"> ○ ES2.1: Transition all County facilities within unincorporated areas to CPA's 100% Green Power option, SCE's 100% Green Rate option, or other available 100% renewable electricity service. ○ ES2.2: Complete enrollment of the community in CPA's 100% Green Power or SCE's Green Rate option. • ES3: Increase Renewable Energy Production: Install rooftop solar PV on 35% of existing residential buildings and 32% of commercial buildings by 2045; install rooftop solar PV on 80% of new multifamily residential buildings and 40% of all new commercial buildings by 2030. <ul style="list-style-type: none"> ○ ES3.1: Require rooftop solar PV for all new development. ○ ES3.2: Install rooftop solar PV at existing buildings. ○ ES3.5: Require and incentivize renewable energy for affordable housing developments for both new development and existing buildings. ○ ES3.6: Streamline and prioritize permitting for solar and battery storage projects. • ES4: Increase Energy Resilience: Achieve community electricity storage and generation capacity equal to the community-wide 24-hour average usage by 2035/2045. <ul style="list-style-type: none"> ○ ES4.1: Develop a program to deploy community resilience hubs at scale ○ ES4.2: Invest in energy storage and microgrids at critical County facilities through CPA's Power Ready Program. ○ ES4.3: Develop a publicly accessible community energy map that identifies opportunities for deploying distributed energy resources and microgrids to improve energy resiliency. ○ ES4.4: Conduct feasibility studies to identify priority areas for solar and storage, combined with building- and community-scale microgrids and alternative technologies such as fuel cells and grid paralleling, to support demand management and peak shaving to increase grid resilience. Study implementation, costs, barriers, and obstacles and identify partnerships. Adopt regulations that establish this use and standards for its development. Limiting peak energy demand can eliminate or reduce the use of high-carbon peaker plants. ○ ES4.5: Develop a Countywide program to promote energy efficiency and resilience measures in facilities providing critical community services • CAP Checklist: <ul style="list-style-type: none"> ○ The project must utilize 100% zero-carbon electricity on-site. ○ To the extent feasible, the project must install energy storage systems and use a building-scale or community microgrid to support demand management and peak shaving.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>Deploy renewable energy production and energy storage directly in new public projects and on existing public facilities (e.g., solar photovoltaic systems on rooftops of municipal buildings and on canopies in public parking lots, battery storage systems in municipal buildings).</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> ES3: Increase Renewable Energy Production: Install 20,000 kW of solar PV at County facilities. <ul style="list-style-type: none"> ES3.3: Identify and install solar PV systems at existing viable County facilities and properties. ES3.4: Explore the feasibility to install community-shared solar facilities on County properties where opportunities exist. ES3.6: Streamline and prioritize permitting for solar and battery storage projects. ES4: Increase Energy Resilience: Establish a community resilience hub program to equip community serving County facilities (e.g., libraries, rec centers, senior centers); Provide solar and battery systems sufficient to support emergency cooling and other emergency functions; Locate at least one hub in each County district, with focus on vulnerable populations. <ul style="list-style-type: none"> ES4.1: Develop a program to deploy community resilience hubs at scale. ES4.2: Invest in energy storage and microgrids at critical County facilities through CPA's Power Ready Program. ES4.4: Conduct feasibility studies to identify priority areas for solar and storage, combined with building- and community-scale microgrids and alternative technologies such as fuel cells and grid paralleling, to support demand management and peak shaving to increase grid resilience. Study implementation, costs, barriers, and obstacles and identify partnerships. Adopt regulations that establish this use and standards for its development. Limiting peak energy demand can eliminate or reduce the use of high-carbon peaker plants. CAP Checklist: <ul style="list-style-type: none"> The project must utilize 100% zero-carbon electricity on-site. To the extent feasible, the project must install energy storage systems and use a building-scale or community microgrid to support demand management and peak shaving.
Climate Action Plan Targets & Performance Standards (2022 Scoping Plan Appendix D, Table 2)	
<p>Scoping Plan Scenario: 100 percent of light-duty vehicle sales are ZEVs by 2035.</p> <p>Recommendation: Potential data sources and tools to localize this for target-setting include EMFAC Fleet Database (by county) and Scenario Analysis Tool and Department of Motor Vehicles Database (by fuel type and registration).</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> T6: Increase ZEV Market Share and Reduce Gasoline and Diesel Fuel Sales: Increase the fleetwide percentage total amount of light-duty vehicles in unincorporated Los Angeles County that are ZEVs to: 30% by 2030, 50% by 2035, and 90% by 2045; Increase the sales of new light-duty vehicles in unincorporated Los Angeles County that are ZEVs to: 68% by 2030 and 100% by 2035. <ul style="list-style-type: none"> T6.1: Develop a Zero Emission Vehicle Master Plan. T6.3: Require all new development to install EVCSs through a condition of approval/ordinance. Residential development must install EVCSs; nonresidential development must install EVCSs at a percentage of total parking spaces.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>Scoping Plan Scenario: VMT per capita reduced 25 percent below 2019 levels by 2030 and 30 percent below 2019 levels by 2045; Potential data sources to localize this for target-setting include VMT modeling outputs prepared for, or consistent with, the travel outcomes associated with the adopted SCS or other applicable regional plan.</p> <p>Recommendation: Potential data sources to localize this for target-setting include VMT modeling outputs prepared for, or consistent with, the travel outcomes associated with the adopted SCS or other applicable regional plan.</p>	<ul style="list-style-type: none"> • CAP Checklist: <ul style="list-style-type: none"> ○ For all new municipal projects and facilities that include the purchase or operation of new fleet vehicles, including public transit buses and shuttles, all such fleet vehicles must be ZEVs. This includes both County-owned vehicles and contractor or vendor fleet vehicles. ○ The project must incorporate ZEV infrastructure and incentives into its design. <p>The 2045 CAP is consistent with this recommendation through the following measures and actions. The 2045 CAP does not achieve the same levels of per-capita VMT reduction as the Scoping Plan Scenario: Compared to 2019 levels, the CAP achieves a 10% reduction in per-capita VMT by 2030, 12% by 2035, and 16% by 2045, which is extremely aggressive for unincorporated Los Angeles County. However, the 2045 CAP is consistent with recommended approach using regional VMT modeling outputs/SCS implementation.</p> <ul style="list-style-type: none"> • Strategy 2: Increase Densities and Diversity of Land Uses Near Transit. • T1: Increase Density Near High-Quality Transit Areas: Achieve a minimum of 20 dwelling units (DUs) per acre (maximum of 30 to 150 DUs per acre) for HQTAs. <ul style="list-style-type: none"> ○ T1.1 and T1.2. • T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use: By 2030, achieve a job density of 300 jobs per acre; For communities with an imbalance of jobs/housing (+ 20%), develop community plans to identify and quantify strategies for bringing below 20%. <ul style="list-style-type: none"> ○ T2.1: Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT. • T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips: Increase bikeway miles by 300% by 2035; Implement the County Bicycle Master Plan; Complete updates to the County's Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans every five years. <ul style="list-style-type: none"> ○ T3.1 through T3.3. • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: By 2030, double transit service hours from 560,000 to 1.12 million; by 2030, install bus-only lanes and signal prioritization on all major transit thoroughfares 100% of all transit routes; by 2030, ensure that 75% of unincorporated Los Angeles County residents live within one-half mile of shuttle or mobility service. <ul style="list-style-type: none"> ○ T4.1 through T4.10. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project is located within a High Quality Transit Area (HQTAs), Specific Plan, or Area Plan, it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Update rezoning. ○ The project must comply with the County's TDM ordinance at the time of project approval.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> ○ The project must comply with the County's current Transportation Impact Analysis (TIA) Guidelines. ○ The project must incorporate pedestrian and bicycle infrastructure into its design. ○ The project must comply with the County's TDM ordinance at the time of project approval. This may include preferential carpool/vanpool parking, bicycle parking, and shower facilities and locker rooms; trip reduction plans; transit-supportive infrastructure development; and similar strategies.
<p>Scoping Plan Scenario: All electric appliances in new construction beginning 2026 (residential) and 2029 (commercial).</p> <p>Recommendation: Potential data sources to localize these for target-setting include: Commercial Building Energy Consumption Survey, California Commercial End Use Survey, Residential Appliance Saturation Survey.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • E2: Standardize All-Electric New Development: All applicable new buildings will be all electric; Residential: 90% all-electric by 2030, 95% by 2035, and 100% by 2045; Nonresidential: 90% all-electric by 2030 (except large industry and possibly food service), 95% by 2035, and 100% by 2045. <ul style="list-style-type: none"> ○ E2.1: Adopt an ordinance requiring all applicable new buildings to be fully electric with no natural gas hookups. Include affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability. • CAP Checklist: For projects under construction before 2030, the project must be fully electric with no natural gas infrastructure or appliances, as specified in the City's all-electric buildings ordinance, unless the project meets specific exemptions identified in the ordinance. For projects under construction after 2030, the project must be zero-net-energy and fully electric with no natural gas infrastructure or appliances, as specified in the City's ZNE ordinance, unless the project meets specific exemptions identified in the ordinance.
<p>Scoping Plan Scenario: For existing residential buildings, 80 percent of appliance sales are electric by 2030 and 100 percent of appliance sales are electric by 2035 (appliances replaced at end of life).</p> <p>Recommendation: Potential data sources to localize these for target-setting include: Commercial Building Energy Consumption Survey, California Commercial End Use Survey, Residential Appliance Saturation Survey.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> • E1: Transition Existing Buildings to All-Electric: Electrify all the existing residential buildings stock 25% by 2030, 40% by 2035, 80% by 2045. <ul style="list-style-type: none"> ○ E1.1: Adopt Building Performance Standards for existing buildings and reach code requirements for major retrofits and renovations that require electric water and space heating. Require buildings to retrofit natural gas water and space heating to electric water and space heating at the point of sale. ○ E1.2: Increase alternatives to natural gas uses, such as for cooking, in existing buildings. Establish carbon intensity limits for existing nonresidential and residential buildings over a certain size. ○ E1.3: Adopt a ZNE ordinance for building renovations, based on certain criteria (such as commercial facilities with 10,000 square feet of additions). Adopt ZNE Building Performance Standards for certain buildings not undergoing major renovations or retrofits.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> ○ E1.5: Create a comprehensive fund aggregation program to support energy efficiency, decarbonization and resilience in new and existing affordable housing. ○ E1.6: Create and resource an energy retrofit accelerator to provide a one-stop shop for guidance, technical support, training, and access to aggregated funds to support building owners and contractors. Target support to low-income communities and affordable housing. ● CAP Checklist: Projects that include a retrofit, remodel, or redesign of an existing building must incorporate the following design elements: <ul style="list-style-type: none"> ○ All space heating and water heating must be electric. ○ With the exception of restaurants, all cooking appliances must be electric. ○ For restaurants, use electric cooking appliances to the maximum extent feasible. ○ Comply with all applicable Building Performance Standards. ○ Comply with all building carbon intensity limits. ○ If the project is a major renovation, achieve ZNE and/or comply with the City's ZNE ordinance.
<p>Scoping Plan Scenario: For existing commercial buildings, 80 percent of appliance sales are electric by 2030 and 100 percent of appliance sales are electric by 2045 (appliances replaced at end of life).</p> <p>Recommendation: Potential data sources to localize these for target-setting include: Commercial Building Energy Consumption Survey, California Commercial End Use Survey, Residential Appliance Saturation Survey.</p>	<p>The 2045 CAP is consistent with this recommendation through the following measures and actions:</p> <ul style="list-style-type: none"> ● E1: Transition Existing Buildings to All-Electric: Electrify all the existing nonresidential buildings stock 15% by 2030, 25% by 2035, 60% by 2045; require ZNE for all major renovations by 2045. <ul style="list-style-type: none"> ○ E1.1: Adopt Building Performance Standards for existing buildings and reach code requirements for major retrofits and renovations that require electric water and space heating. Require buildings to retrofit natural gas water and space heating to electric water and space heating at the point of sale. ○ E1.2: Increase alternatives to natural gas uses, such as for cooking, in existing buildings. Establish carbon intensity limits for existing nonresidential and residential buildings over a certain size. ○ E1.3: Adopt a ZNE ordinance for building renovations, based on certain criteria (such as commercial facilities with 10,000 square feet of additions). Adopt ZNE Building Performance Standards for certain buildings not undergoing major renovations or retrofits. ○ E1.5: Create a comprehensive fund aggregation program to support energy efficiency, decarbonization, and resilience in new and existing affordable housing. ○ E1.6: Create and resource an energy retrofit accelerator to provide a one-stop shop for guidance, technical support, training, and access to aggregated funds to support building owners and contractors. Target support to low-income communities and affordable housing. ● CAP Checklist: Projects that include a retrofit, remodel, or redesign of an existing building must incorporate the following design elements: <ul style="list-style-type: none"> ○ All space heating and water heating must be electric. ○ With the exception of restaurants, all cooking appliances must be electric.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> ○ For restaurants, use electric cooking appliances to the maximum extent feasible. ○ Comply with all applicable Building Performance Standards. ○ Comply with all building carbon intensity limits. ○ If the project is a major renovation, achieve ZNE and/or comply with the City's ZNE ordinance.
Greenhouse Gas Targets (2022 Scoping Plan, pursuant to AB 1279)	
85% below 1990 levels by 2045.	<p>The 2045 CAP is consistent with this target for the following reason:</p> <ul style="list-style-type: none"> • 2045 Target: The CAP has a target of 85% below 1990 levels by 2045, consistent with the state target.
Carbon neutrality by 2045.	<p>The 2045 CAP is consistent with this target for the following reasons:</p> <ul style="list-style-type: none"> • 2045 Target: The CAP has a target of 85% below 1990 levels by 2045. The CAP does not have a target of carbon neutrality, but this is not required by the scoping plan and may not be appropriate for all jurisdictions. • 2045 Aspirational Goal: The 2045 CAP also includes an aspirational goal to achieve carbon neutrality by 2045 to align with the We Are Still In Declaration and the state's carbon reduction targets and goals. • Carbon Removal: Action ES1.3 states, "Develop a carbon removal strategy that considers direct air capture and carbon capture and sequestration (CCS)." This program will be developed via the CAP into the future to help the County aim for carbon neutrality. Measures A1, A2, and A3 also call for and promote carbon sequestration to balance remaining direct emissions. • CAP Checklist: The checklist allows projects to screen out of completing the checklist in full if the project achieves zero GHG emissions compared to the existing on-site development at the project site.
GHG reduction targets should typically be estimated for specific years aligned with the State's long-term climate targets established through existing laws or policy guidance.	<p>The 2045 CAP is consistent with this recommendation for the following reason:</p> <ul style="list-style-type: none"> • Multiple target years: The CAP's targets for 2030 and 2045 align or exceed state targets for these years. The CAP also has an interim 2035 target on the trendline from 2018 to 2045.
Jurisdictions should consider their respective share of the statewide reductions necessary to achieve the State's long-term climate targets. Jurisdictions should also evaluate their GHG inventory when establishing targets consistent with the State's long-term climate targets and should tailor their inventory to ensure the sectors included in the State's targets align with those included in the local jurisdiction's inventory and target. Local governments should focus on sources and actions within their control.	<p>The 2045 CAP is consistent with this recommendation for the following reasons:</p> <ul style="list-style-type: none"> • Inventory and forecast: The 2045 CAP includes a 2015 baseline GHG emissions inventory, a 2018 GHG emissions inventory update, and projections of 2030, 2035, and 2045 emissions. GHG emissions for all of these years include emissions associated with all activities occurring within the boundaries of unincorporated Los Angeles County. • Excluded sectors: Sectors over which the County has no control were excluded from the inventory, forecast, and target. These include Cap-and-Trade covered entities (like large stationary sources and power plants), airports, ports and marine, military, and other sources.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>A jurisdiction that periodically examines their long-term GHG reduction trajectory is in a better position to determine whether GHG emission levels contemplated in their CAP are sustainable. This type of long-term approach benefits from interim reduction targets rather than a single target.</p>	<p>The 2045 CAP is consistent with this recommendation for the following reasons:</p> <ul style="list-style-type: none"> • Multiple targets: The CAP includes separate targets for 2030, 2035, and 2045 (see above). • Implementation and tracking: Chapter 4 of the CAP includes an implementation and tracking plan, including regular inventory and CAP updates. Appendix E has specific performance goals and tracking metrics for each measure and action.
<p>Align local GHG-reducing strategies and actions with the respective State policies that will deliver GHG emission reductions, if successfully implemented and supported at the local level. The CAP target-setting process should account for projected GHG emission reductions from State policies, programs, and strategies implemented over time.</p>	<p>The 2045 CAP is consistent with this recommendation for the following reason:</p> <ul style="list-style-type: none"> • Adjusted BAU forecast: The Adjusted BAU forecast accounts for future growth under BAU conditions but makes adjustments for federal, state, and County legislative regulations that were implemented before the development of the 2045 CAP. These actions include the California Energy Commission's 2019 and 2023 Title 24 building energy efficiency requirements, the Renewable Portfolio Standards (SB 350), the California Department of Resources Recycling and Recovery (CalRecycle) 75 percent waste diversion initiative (AB 341), the Pavley and Advanced Clean Car Standards (AB 1493), and the Low Carbon Fuel Standards (Executive Order S-01-07).
<p>Jurisdictions should avoid creating targets that are impossible to meet as a basis to determine significance. A net-zero target that makes it more difficult to achieve statewide goals by prohibiting or complicating projects that are needed to support the State's climate goals, like infill development or solar arrays, is not consistent with the State's goals.</p>	<p>The 2045 CAP is consistent with this recommendation for the following reasons:</p> <ul style="list-style-type: none"> • 2045 Target: The CAP has a target of 85% below 1990 levels by 2045, consistent with the state target. • 2045 Aspirational Goal: The 2045 CAP also includes an aspirational goal to achieve carbon neutrality by 2045 to align with the We Are Still In Declaration and the state's carbon reduction targets and goals. • Infill and affordable housing: The CAP prioritizes infill and affordable housing development in a myriad of ways. For example: <ul style="list-style-type: none"> ○ Action ES3.5 states, "Require and incentivize renewable energy for affordable housing developments for both new development and existing buildings." ○ Action ES5.1 calls for requirements for new development, but includes "affordable housing considerations in these requirements, and develop supporting measures (financial support, technical assistance, or other incentives) to defray potential additional first costs in order to maintain housing affordability." ○ Action E1.5 states, "Create a comprehensive fund aggregation program to support energy efficiency, decarbonization and resilience in new and existing affordable housing." • Carbon Removal: Action ES1.3 states, "Develop a carbon removal strategy that considers direct air capture and carbon capture and sequestration (CCS)." This program will be developed via the CAP into the future to help the County aim for carbon neutrality. Measures A1, A2, and A3 also call for and promote carbon sequestration to balance remaining direct emissions.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
	<ul style="list-style-type: none"> • CAP Checklist: The checklist allows projects to screen out of completing the checklist in full if the project achieves zero GHG emissions compared to the existing on-site development at the project site.
Equity and Affordable Housing (2022 Scoping Plan Appendix D, Section 1.1)	
<p>Local policies that make it easier for people to afford homes in places with good access to jobs, services, open space, and education, as well as a variety of transportation options that reduce the need to drive, advance equity and reduce GHG emissions.</p>	<p>The 2045 CAP and other County programs and policies are consistent with this recommendation for the following reasons: ^a</p> <ul style="list-style-type: none"> • County Racial Equity Strategic Plan: To address the implementation of the 2045 CAP strategies, measures, and actions in an equitable manner, the County identified applicable guiding principles from the Los Angeles County Draft Racial Equity Strategic Plan to assist with the equitable distribution of benefits and resources across all segments of a community. • Grants Program: Grants will be highly considered in place of the traditional rebate programs for frontline communities. • Feasibility Studies: Feasibility studies initiated by a CAP action will also include additional feasibility analysis for frontline communities to identify necessary additional support. • Housing Element: In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program.
<p><u>Ensuring that vulnerable communities benefit from efforts to reduce GHG emissions</u> is crucial to the State's climate strategy.</p>	<p>The 2045 CAP and other County programs and policies are consistent with this recommendation for the following reasons: ^a</p> <ul style="list-style-type: none"> • County Racial Equity Strategic Plan: To address the implementation of the 2045 CAP strategies, measures, and actions in an equitable manner, the County identified applicable guiding principles from the Los Angeles County Draft Racial Equity Strategic Plan to assist with the equitable distribution of benefits and resources across all segments of a community. • Grants: Grants will be highly considered in place of the traditional rebate programs for frontline communities. • Monitoring and Reporting Program: A monitoring and reporting mechanism will be developed to track the overall implementation of the CAP and monitor the rate of implementation in frontline communities. • Inclusion of Tribal and Indigenous Communities: Consultations with the Los Angeles City/County Native American Indian Commission and individual tribes will be held to start a dialogue on how climate change is impacting the indigenous population and what the County can do to support equitable implementation of CAP actions within their communities. • T1: Increase Density Near High-Quality Transit Areas: Implement and complete Housing Element Update rezoning programs to achieve the minimum densities; locate a majority of residential and employment centers in unincorporated Los Angeles County are within 1 mile of an HQT.

2022 SCOPING PLAN RECOMMENDATION	2045 CAP CONSISTENCY
<p>Local government is well-positioned to design housing policies to address climate goals and design climate policies to meet the State's housing needs. <u>Land use strategies that support more compact development in infill areas, particularly those already displaying efficient resident travel patterns, have the greatest potential to reduce emissions. Infill housing development</u> alleviates pressure to develop on the urban periphery, preserving natural and working lands and areas often at risk of wildfire.</p>	<ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. ○ T1.2: Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing. <p>The 2045 CAP and other County programs and policies are consistent with this recommendation for the following reasons: ^a</p> <ul style="list-style-type: none"> • Housing Element: In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program. • T1: Increase Density Near High-Quality Transit Areas: <ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. ○ T1.2: Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing. • T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use: By 2030, achieve a job density of 300 jobs per acre; For communities with an imbalance of jobs/housing (+ 20%), develop community plans to identify and quantify strategies for bringing below 20%. <ul style="list-style-type: none"> ○ T2.1: Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT. • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: By 2030, double transit service hours from 560,000 to 1.12 million; by 2030, install bus-only lanes and signal prioritization on all major transit thoroughfares 100% of all transit routes; by 2030, ensure that 75% of unincorporated Los Angeles County residents live within one-half mile of shuttle or mobility service <ul style="list-style-type: none"> ○ T4.1: Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit, autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles. ○ T4.2 through T4.4. ○ T4.6: Offer free transit passes for students, youth, seniors, people with disabilities, and low-income populations. ○ T4.7 through T4.10. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project has a residential component and 100% of the units, excluding manager's units, are set aside for lower income households, then the project can screen out of several of the required transportation elements.

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<p><u>Accelerating housing production</u> to meet the extraordinary need for more homes can help reduce vehicle miles traveled (VMT) and GHG emissions and advance health and equity objectives when new housing is developed in types and locations that align with these goals, and particularly when accompanied by complementary policies and investments to create sustainable communities and <u>prevent displacement of existing residents</u>.</p>	<ul style="list-style-type: none"> ○ If the project is located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor and does not replace residential units set aside for lower income households with a smaller number of market-rate residential units, then the project can screen out of several of the required transportation elements. ○ If the project is located within a High Quality Transit Area (HQTAs), Specific Plan, or Area Plan, it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Update rezoning. ○ The project must comply with the County's TDM ordinance at the time of project approval. ○ The project must comply with the County's current Transportation Impact Analysis (TIA) Guidelines. <p>The 2045 CAP and other County programs and policies are consistent with this recommendation for the following reasons: ^a</p> <ul style="list-style-type: none"> • Housing Element: In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program. • Anti-Displacement: As part of a larger effort to stem displacement of vulnerable populations, the County's General Plan Housing Element includes Program 43, which will assess displacement and gentrification risk through a Displacement Risk Study. The data will be presented through an Anti-Displacement Mapping Tool to ensure that the most current information is available as County departments implement anti-displacement efforts. The Anti-Displacement Mapping Tool will help to inform the implementation of CAP actions in communities that are already vulnerable to displacement or gentrification. Equity strategies may include the utilization of grant programs to prevent passing the costs to tenants or additional public engagement to clear up any misconception of property assessments. • T1: Increase Density Near High-Quality Transit Areas: <ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. ○ T1.2: Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project has a residential component and 100% of the units, excluding manager's units, are set aside for lower income households, then the project can screen out of several of the required transportation elements. ○ If the project is located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor and does not replace residential units set aside for lower income households with a smaller number of market-rate residential units, then the project can screen out of several of the required transportation elements.

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<p><u>Fostering transportation-efficient, resource-rich, accessible, and inclusive communities</u> is a key strategy for climate, equity, health, and affordability. <u>Increasing housing opportunities in transportation-efficient locations</u> is a necessary paradigm shift and is part of the State's GHG emission reduction strategy.</p>	<p>The 2045 CAP and other County programs and policies are consistent with this recommendation for the following reasons: ^a</p> <ul style="list-style-type: none"> • Housing Element: In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program. • T1: Increase Density Near High-Quality Transit Areas: <ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. ○ T1.2: Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing. • T2: Develop Land Use Plans Addressing Jobs-Housing Balance and Increase Mixed Use: By 2030, achieve a job density of 300 jobs per acre; For communities with an imbalance of jobs/housing (+ 20%), develop community plans to identify and quantify strategies for bringing below 20%. <ul style="list-style-type: none"> ○ T2.1: Develop community plans that will increase the percentage of residents who could live and work within the same community, and that could decrease VMT. • T3: Expand Bicycle and Pedestrian Network to Serve Residential, Employment, and Recreational Trips: Increase bikeway miles by 300% by 2035; Implement the County Bicycle Master Plan; Complete updates to the County's Pedestrian Action Plan, Bicycle Master Plan, and Active Transportation Plans every five years. <ul style="list-style-type: none"> ○ T3.1 through T3.3. • T4: Broaden Options for Transit, Active Transportation, and Alternative Modes of Transportation: All transit corridors will have micromobility service; Improved services and access for children, elderly, disabled, and users needing accommodations for bicycles or active transportation; by 2030, double transit service hours from 560,000 to 1.12 million; by 2030, install bus-only lanes and signal prioritization on all major transit thoroughfares 100% of all transit routes; by 2030, ensure that 75% of unincorporated Los Angeles County residents live within one-half mile of shuttle or mobility service. <ul style="list-style-type: none"> ○ T4.1: Expand and improve the frequency of service of unincorporated Los Angeles County shuttles and explore new mobility services, such as micro transit, autonomous delivery vehicles, micro mobility, and on-demand autonomous shuttles. ○ T4.2 through T4.4. ○ T4.6: Offer free transit passes for students, youth, seniors, people with disabilities, and low-income populations. ○ T4.7 through T4.10. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project has a residential component and 100% of the units, excluding manager's units, are set aside for

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<p><u>Policies to facilitate both market rate and subsidized affordable housing production in infill neighborhoods</u> should, over time, stabilize housing costs, minimize displacement, and create new housing opportunities in transportation-efficient locations.</p>	<p>lower income households, then the project can screen out of several of the required transportation elements.</p> <ul style="list-style-type: none"> ○ If the project is located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor and does not replace residential units set aside for lower income households with a smaller number of market-rate residential units, then the project can screen-out of several of the required transportation elements. ○ If the project is located within a High Quality Transit Area (HQTAs), Specific Plan, or Area Plan, it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Update rezoning. ○ The project must comply with the County's TDM ordinance at the time of project approval. ○ The project must comply with the County's current Transportation Impact Analysis (TIA) Guidelines. <p>The 2045 CAP and other County programs and policies are consistent with this recommendation for the following reasons: ^a</p> <ul style="list-style-type: none"> • Housing Element: In 2022, the County updated its Housing Element to reduce regulatory barriers and provide incentives to promote the equitable distribution of sustainable housing development through programs that include but are not limited to the Rezoning Program, Residential Parking Program, Rent Stabilization Ordinance, and Affordable Housing and Sustainable Communities Program. • Grants Program: Grants will be highly considered in place of the traditional rebate programs for frontline communities. • T1: Increase Density Near High-Quality Transit Areas: <ul style="list-style-type: none"> ○ T1.1: Incentivize residential and community-serving uses to be developed in high quality transit areas (HQTAs), while ensuring inclusion of vital public amenities, such as parks and active transportation infrastructure. ○ T1.2: Develop land use tools that will increase the production of a diversity of housing types, such as missing middle housing. • CAP Checklist: <ul style="list-style-type: none"> ○ If the project has a residential component and 100% of the units, excluding manager's units, are set aside for lower income households, then the project can screen out of several of the required transportation elements. ○ If the project is located within a one-half mile radius of a major transit stop or an existing stop along a high-quality transit corridor and does not replace residential units set aside for lower income households with a smaller number of market-rate residential units, then the project can screen out of several of the required transportation elements. ○ If the project is located within a High Quality Transit Area (HQTAs), Specific Plan, or Area Plan, it must achieve a minimum of 20 dwelling units (DU) per acre, consistent with the Housing Element Update rezoning.

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CEQA Streamlining (2022 Scoping Plan Appendix D, Section 2)	
Once adopted, CEQA-qualified CAPs provide local governments with a valuable tool for 1) coordinated climate planning in their community and 2) streamlining the CEQA GHG analysis for projects consistent with a CEQA-qualified CAP.	<p>The 2045 CAP is consistent with this recommendation for the following reason:</p> <ul style="list-style-type: none"> • CEQA Qualified CAP: the 2045 CAP is a CEQA-qualified CAP (see above).
This tiering and streamlining evaluates whether the proposed project would demonstrate consistency with 1) the adopted plans, as well as the growth and land use assumptions that underlie the CEQA-qualified CAP, and 2) all applicable GHG reduction measures identified in the CAP.	<p>The 2045 CAP is consistent with this recommendation for the following reason:</p> <ul style="list-style-type: none"> • Growth consistency: The CAP Checklist requires that projects be consistent with the General Plan including the Land Use Element and the 2021-2029 Housing Element.
CAP compliance checklists can be used with a CEQA-qualified CAP for future CEQA streamlining. The CAP compliance checklists are then included as part of the proposed project's CEQA analysis documenting the project's consistency with the CEQA-qualified CAP.	<p>The 2045 CAP is consistent with this recommendation for the following reason:</p> <ul style="list-style-type: none"> • CAP Checklist: Appendix F is the CAP checklist for projects.
CARB has identified three priority areas that address the State's largest sources of emissions that local governments have authority or influence over.	<p>CAP measures and actions: the CAP includes all the suggested measures and strategies recommended by CARB. See the <i>GHG Reduction Strategies and Actions</i> section above.</p>

Abbreviations:

2021–2029 Housing Element = 2021–2029 Revised County of Los Angeles Housing Element; 2022 Scoping Plan = 2022 Scoping Plan for Achieving Carbon Neutrality; 2045 CAP = 2045 Los Angeles County Climate Action Plan; AB = Assembly Bill; BAU = business-as-usual; BIPOC = Black, Indigenous, and People of Color; Board = Board of Supervisors; CalRecycle = California Department of Resources Recycling and Recovery; CAP = climate action plan; CARB = California Air Resources Board; CCS = capture and carbon and sequestration; CEQA = California Environmental Quality Act; City = City of Los Angeles; County = County of Los Angeles government; Countywide = Los Angeles County in its entirety, inclusive of both unincorporated areas and all 88 incorporated cities; CPA = Clean Power Alliance; DU = dwelling unit; EMFAC = Emission FACTors; EV = electric vehicle; EVCS = electric vehicle charging station; General Plan = Los Angeles County General Plan 2035; HQTa = high quality transit area; kBtu = one thousand British thermal units; kW = kilowatt; LD = light-duty; MD/HD = medium-duty/heavy-duty; Metro = Los Angeles County Metropolitan Transportation Authority; PV = photovoltaic; SB = Senate Bill; SCE = Southern California Edison; SCS = Sustainable Communities Strategy; TDM = transportation demand management; TIA = Transportation Impact Analysis; unincorporated Los Angeles County = the unincorporated areas of Los Angeles County; VMT = vehicle miles traveled; ZEV = zero-emission vehicle; ZNE = Zero Net Energy

NOTE:

Some of the listed policies and programs go beyond what is identified in the 2045 CAP but are components of the 2045 CAP's implementation plan as discussed in Chapter 4.