3

GREENHOUSE GAS REDUCTION STRATEGIES AND MEASURES

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Introduction

This chapter outlines strategies and reduction measures that will help the County of San Diego (County) achieve its near-term 2020 and 2030 greenhouse gas (GHG) reduction targets and 2050 goal. The strategies and reduction measures focus on local reduction actions that will help achieve additional emission reductions beyond legislative actions taken by the federal or State governments.

Strategies are organized under five GHG emissions categories:

- Built Environment and Transportation
- Energy
- Solid Waste
- Water and Wastewater
- Agriculture and Conservation

Reduction measures implement the strategies by identifying specific locally based-actions to reduce GHG emissions.

The strategies focus on reductions at the unincorporated community level, but also include County operations to address the roles of the public and private sectors to achieve the Climate Action Plan (CAP) emission reduction targets. Through partnerships with and among residents, businesses, and other organizations, these measures could provide net benefits such as an improved environment, cost savings, conserved resources, and greater quality of life.

In addition to defining new GHG reduction strategies and reduction measures, the CAP aligns with existing plans, programs, and activities that the County has already undertaken to reduce emissions. The CAP acknowledges these efforts and, in some cases, builds or expands on them.

Many of the strategies and measures to reduce GHG emissions will also have important additional benefits, which are discussed in this chapter. These co-benefits vary and include results such as additional jobs and economic development, cleaner air, fewer illnesses and disease, reduced energy and water costs, or an overall improvement in the quality of life and public health. In general, the strategies and measures contained in the CAP will support community resilience against changing weather patterns. These are critically important components of climate action planning, and are discussed in detail in Chapter 4.

Co-benefits are the additional, beneficial effects that will result from implementation of strategies and measures identified in the CAP.

Local EV charging station in Borrego Springs.

Summary of Greenhouse Gas Reduction Strategies

The CAP focuses on reducing GHG emissions by 2020 and 2030, consistent with legislatively-adopted State targets, as described in Chapter 2. The County has established local GHG emissions reduction targets for 2020 and 2030 of two percent and 40% below 2014 emissions levels, respectively. While not a codified reduction target, the State has set a GHG emissions reduction goal for 2050 through an executive order (Executive Order [EO] S-3-05). Consistent with the State, the County has also identified a local reduction goal for 2050 of 77% below 2014 emissions levels. The County's local GHG emissions reduction targets identify 2014 as the base year from which to measure progress.

The County aims to reduce annual GHG emissions to:

- two percent below 2014 levels by 2020
- 40% below 2014 levels by 2030
- 77% below 2014 levels by 2050

Currently, the County is on a trajectory to meet its 2020 GHG reduction target through existing State legislative actions, as described in Chapter 2. However, relying only on State actions, the county's GHG emissions will fall short of the 2030 reduction target and 2050 reduction goal by 897,145 metric tons of carbon dioxide equivalent ($MTCO_2e$) and 2,252,861 $MTCO_2e$, respectively. With the measures included in the CAP, the county's GHG emissions will achieve and surpass the 2020 reduction target and meet the 2030 reduction target, but will still need to reduce emissions by 1,426,721 $MTCO_2e$ to meet the 2050 reduction goal.

Over the coming decades, new innovations and technologies are anticipated to become available that will enable further GHG reductions and make progress towards the 2050 GHG reduction goal. New methods may also become available to quantify measures that are currently unquantifiable. In addition, future federal and State regulations could further reduce emissions in sectors currently addressed primarily by local County measures.

The California Air Resources Board's (CARB's) *California's 2017 Climate Change Scoping Plan* (Scoping Plan Update) focuses on meeting the 2030 reduction target, as directed in Senate Bill (SB) 32. As such, the County's CAP aligns with the State in proposing measures that meet the 2030 reduction target. As climate science and policy continues to advance, including future updates to the Scoping Plan, the County will be able to apply new reductions toward meeting the long-term 2050 GHG emissions reduction goal in future CAP updates, which will occur every five years as outlined in Chapter 5.

Over time, the County will monitor, review, and update the CAP with new reduction measures to ensure continued effectiveness and progress towards meeting the 2050 emissions reduction goal.

Collectively, State legislative actions and the CAP reduction measures will help the County meet its 2030 reduction target. Figure 3.1 shows the percent breakdown of all GHG reductions from the proposed reduction measures, by category, along with State legislative reductions for 2030, which is the target year of focus for the CAP measures. State legislative actions are contributing 50% of the

GHG reductions needed in the unincorporated county to achieve the 2030 reduction target. Reductions from both CAP measures and legislative reductions in the Energy category achieve the greatest reduction potential locally, at 61% from 2014 levels, compared to other categories.

Given that on-road transportation is the largest source of GHG emissions in the county (see Table 2.1), the County has proposed several measures to reduce the number and length of vehicle trips. However, the County has limited options under its control for implementing transportation-based strategies. Consequently, the CAP reduction measures from the Energy category achieve the greatest reduction potential locally.

Table 3.1 shows the GHG reductions attributable to the measures included in the CAP, and Table 3.2 shows how the anticipated reductions will help the County meet its GHG reduction targets. See Appendix C for detailed calculations and an explanation of how the measures in the CAP work towards achieving the 2020 and 2030 reduction targets.

Table 3.1 GHG Reductions by Category from Proposed Strategies and Measures ($MTCO_2e$)

Category	2020	2030	2050
Built Environment and Transportation	6,020	233,758	64,459
Energy	125,140	553,449	639,508
Solid Waste	0	79,052	86,052
Water and Wastewater	254	17,920	19,738
Agriculture and Conservation	791	12,965	16,384
Total Reductions	**132,205**	**897,145**	**826,141**

Notes: Columns may not add to totals due to rounding.
GHG = greenhouse gas emissions
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source: Data modeled by Ascent Environmental in 2017.

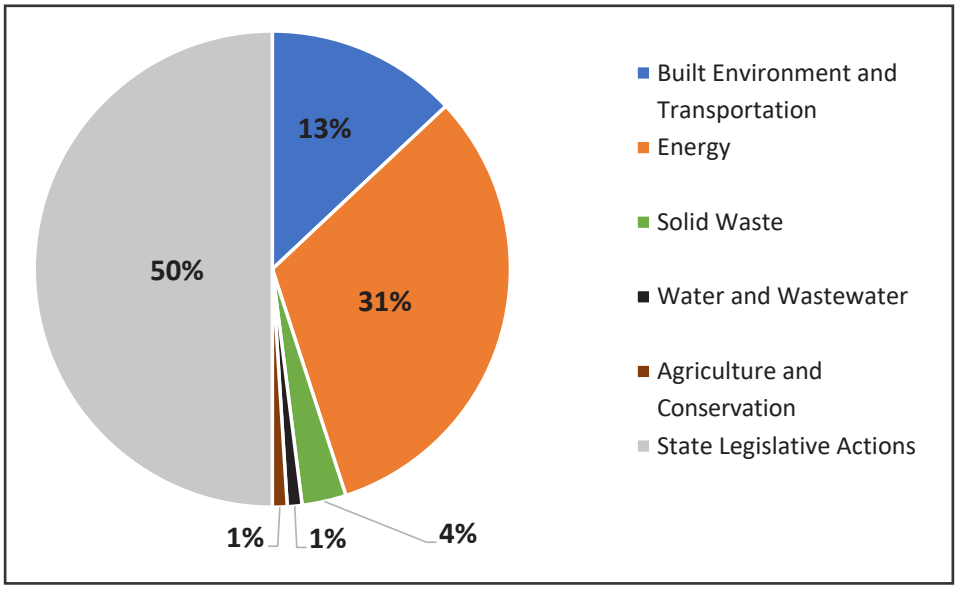

Figure 3.1 Total GHG Reductions from Strategies and State Actions in 2030

Table 3.2 Effect of Climate Action Plan Measures on County Emissions and Targets ($MTCO_2e$)

Emissions Source	2020	2030	2050
Projected Emissions without Legislative Reductions (BAU)	3,407,168	3,723,596	4,220,560
Reductions from State Legislative Actions	388,498	899,547	1,229,053
Legislative-Adjusted County Emissions	3,018,671	2,824,049	2,991,507
Reductions from CAP Measures	132,205	897,145	826,141
County Emissions with CAP (Percent below 2014)	2,886,465 (10%)	1,926,903 (40%)	2,165,367 (33%)
County Target Emissions (Percent below 2014)	3,147,275 (2%)	1,926,903 (40%)	738,646 (77%)
Additional GHG Reductions Needed to Meet Targets	0	0	1,426,721

Notes: Columns may not add to totals due to rounding.
BAU = Business-As-Usual
CAP = Climate Action Plan
GHG = greenhouse gas emissions
MTCO2e = metric tons of carbon dioxide equivalents
Source: Data modeled by Ascent Environmental in 2017.

Detailed Strategies, Measures, and Supporting Efforts

Emission sectors are consolidated and categorized into five GHG categories. Each category includes GHG reduction strategies that identify the performance-based outcome for the corresponding group of measures. *Strategies* organize the multiple measures that the County will implement to reduce GHG emissions. *Measures* identify the specific programs and policy actions that the County will carry out to achieve its climate action strategies. In addition, measures are reinforced by *supporting efforts*, which are unquantifiable actions that will further aid in the implementation of the GHG reduction measures.

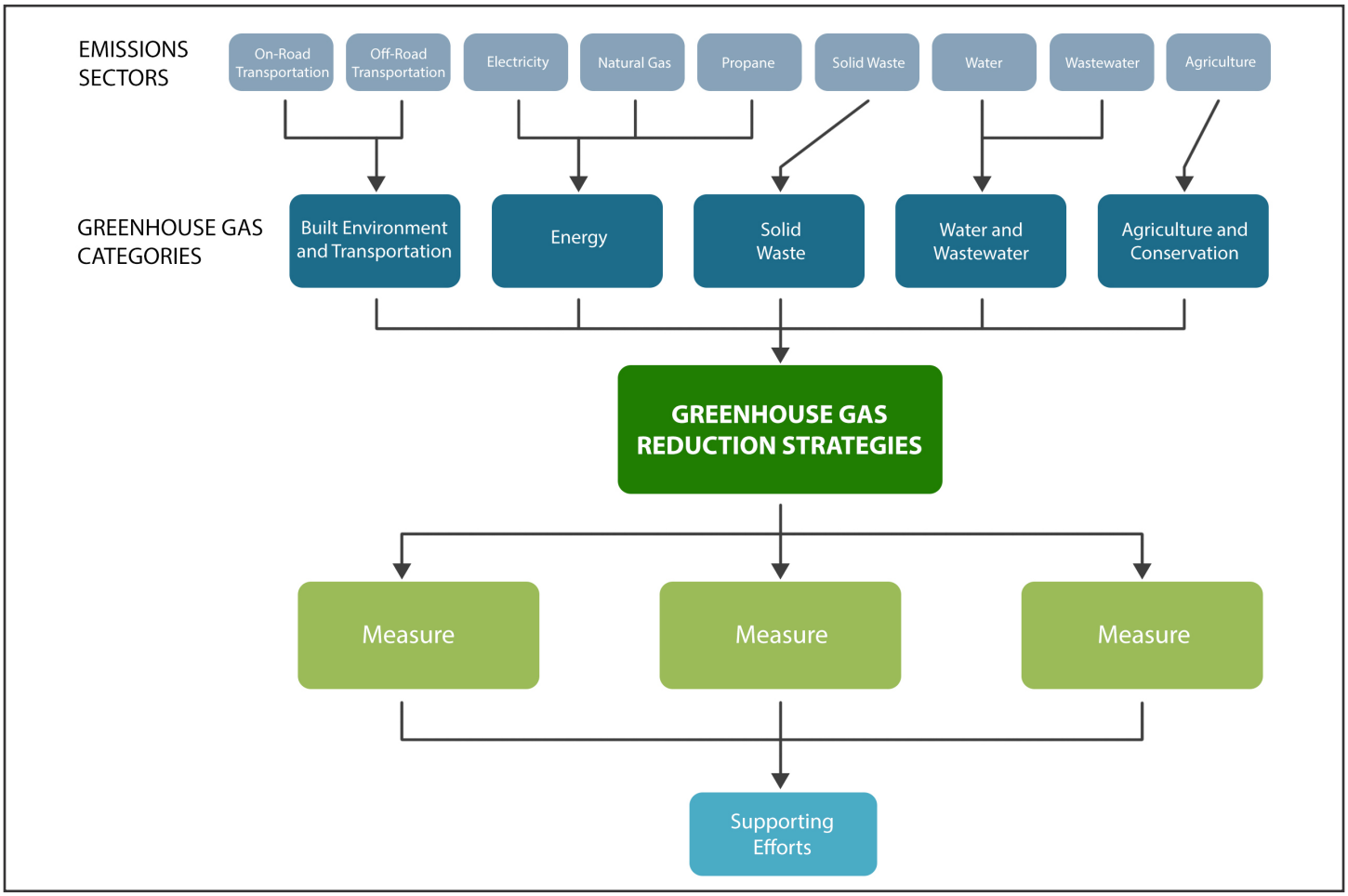

Figure 3.2 GHG Reduction Framework

Eleven strategies serve as the organizing framework for the GHG reduction measures within each of the five emissions-based categories. These strategies align with the County's General Plan policies, as detailed in Appendix F.

Each strategy is followed by separate tables describing each GHG reduction measure that contributes to the strategy. To help close the gap between the County's future legislative-adjusted business-as-usual (BAU) emissions and State targets, the CAP proposes 26 GHG reduction measures within the framework of the 11 strategies.

The measures are presented in tables that describe:

- each measure summary;
- the measure's anticipated GHG emissions reductions;
- whether the measure is to be implemented by a County initiative (i.e., County is responsible for funding, development, and implementation);
- whether the measure is to be implemented through a new requirement (i.e., actions required by the Board through codes, ordinances, policies or other mechanisms to ensure measure implementation);

- whether the measure is to be implemented by participation in an incentive-based program (i.e., activities or programs for which the County or other entities will provide a funding mechanism for measure implementation);
- implementation actions and time frame;
- department(s) responsible for measure implementation;
- relative costs to County and private residents and businesses;
- performance-based outcomes;
- co-benefits; and
- supporting efforts.

Responsibilities for overall implementation and maintenance of the CAP are described in Chapter 5.

The relative costs for each measure are represented by an order of magnitude (low, medium or high) estimate of costs or rate of return associated with implementation. "High" cost actions will be defined as consuming a substantial portion of the local government budget. Examples of cost ranking are provided below.

Relative Cost	Description
Low	Assumes that existing full-time-equivalent (FTE) employees and/or programs could accommodate measure implementation, and that sufficient incentives, subsidies or rebates would be available to nearly offset the upfront cost of implementation to individuals or businesses.
Medium	Assumes that existing and/or additional full-time-equivalent (FTE) employees, programs, and/or facilities could accommodate measure implementation, and that private businesses or individuals would incur short-term costs of improvements, infrastructure or employee training.
High	Assumes that additional full-time-equivalent (FTE) employees, programs, and/or facilities may be required to implement the measure and that private businesses or individuals would incur short-term and long-term costs of improvements, infrastructure or employee training.

The co-benefits identified for each measure represent beneficial secondary effects that may be realized as a result of implementing strategies and measures in the CAP. Co-benefits are not required to meet the County's reduction targets and goal, but identify potential secondary gains beyond reductions in GHG emissions. For example, the CAP emphasizes planting trees to help reduce GHG emissions. Planting trees could also result in carbon sequestration, improved air quality, and an overall improvement in quality of life.

Co-benefits can range widely; each of the 26 reduction measures may have one or more of the following 12 co-benefits:

Air quality: the measure may result in cleaner air.

Biological resources: the measure may result in conservation or preservation of plant and animal species.

Carbon sequestration: the measure may result in removal of carbon from the air or capture and storage of carbon.

Community health: the measure may result in an overall improvement in quality of life.

Cost savings: the measure may result in reduced energy and water costs, fuel savings, and/or cost savings from use of available incentives.

Energy savings: the measure may result in reduced energy consumption.

Improved mobility: the measure may result in greater ease of movement.

Job generation: the measure may result in additional jobs and economic development.

Noise reduction: the measure may result in reduced noise pollution.

Public health: the measure may result in fewer illnesses and disease.

Water quality: the measure may result in cleaner water.

Water savings: the measure may result in reduced water consumption.

Also presented within each measure table are supporting efforts, which represent additional actions that complement the reduction measure. These supporting efforts were not relied upon for the quantification of the reduction measures. The supporting efforts are not quantifiable on their own due to data limitations or lack of available methods to quantify emissions reductions; however, these qualitative efforts reinforce the 26 quantifiable reduction measures and may be quantified in future CAP updates, as described in Chapter 5.

The 26 reduction measures were developed based on a combination of factors, including:

- the feasibility of the measure to be implemented by the County;
- the need for greater reductions in the categories with the most emissions, especially in energy and transportation (See Figure 2.1);
- existing policies, actions or programs that can be expanded or proposed policies yet to be adopted;
- feedback from community and other stakeholders; and
- technological innovations.

Additional details and calculations can be found in Appendix C. Chapter 5 further describes how measures will be implemented.

In summary, each GHG reduction measure included in this chapter consists of the following components: 1) measure summary, 2) anticipated GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

Primary County departments responsible for measure implementation include:

- DEH - Department of Environmental Health
- DGS - Department of General Services
- DHR - Department of Human Resources
- DPC - Department of Purchasing and Contracting
- DPR - Department of Parks and Recreation
- DPW - Department of Public Works
- PDS - Planning & Development Services
- SDAPCD - San Diego County Air Pollution Control District

Built Environment and Transportation

On-road internal combustion transportation is the largest contributor to the unincorporated county's GHG emissions. Emissions from on-road transportation sources accounted for 45% of the unincorporated county's total emissions in 2014. Emissions from off-road sources contributed another one percent of total emissions in 2014. The CAP's Built Environment and Transportation measures will contribute:

- one percent of GHG reductions estimated for 2020;
- 13% of GHG reductions needed to meet the 2030 target (Figure 3.3); and
- eight percent of GHG reductions estimated for 2050.

The transportation-related measures proposed under this category aim to reduce emissions by reducing the number and length of vehicle trips through smarter land use planning, increasing the use of alternative modes of transportation, and encouraging a shift to electric and alternatively-fueled vehicles. Emissions reductions from these measures rely on successful coordination with, and participation from, local and regional transportation and planning agencies, incorporated cities in the county, residents, and businesses.

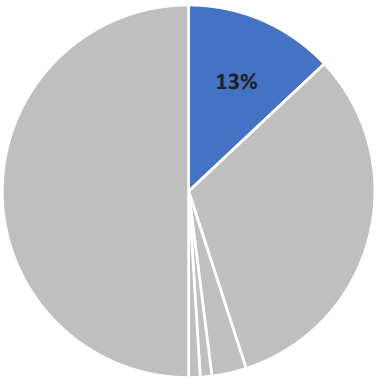

Figure 3.3 Built Environment and Transportation Reductions for 2030

The Built Environment and Transportation category is composed of four strategies and 12 measures with supporting efforts:

Strategy T-1: Reduce Vehicle Miles Traveled

- Measure T-1.1: Acquire Open Space Conservation Land
- Measure T-1.2: Acquire Agricultural Easements
- Measure T-1.3: Update Community Plans

Strategy T-2: Shift Towards Alternative Modes of Transportation

- Measure T-2.1: Improve Roadway Segments as Multi-modal
- Measure T-2.2: Reduce Emissions from New Non-residential Development Vehicle Miles Traveled
- Measure T-2.3: Reduce County Employee Vehicle Miles Traveled
- Measure T-2.4: Shared and Reduced Parking in New Non-residential Development

Strategy T-3: Decarbonize On-road and Off-road Vehicle Fleet

- Measure T-3.2: Use Alternative Fuels in County Projects
- Measure T-3.3: Develop a Local Vehicle Retirement Program
- Measure T-3.4: Reduce the County's Fleet Emissions
- Measure T-3.5: Install Electric Vehicle Charging Stations

Strategy T-4: Invest in Local Projects to Offset Carbon Emissions

- Measure T-4.1: Establish a Local Direct Investment Program

Strategy T-1: Reduce Vehicle Miles Traveled

The County's General Plan provides a framework to accommodate future development in an efficient and sustainable manner that is compatible with the character of unincorporated communities and the protection of valuable and sensitive natural resources. In accommodating growth, the County focuses on the provision of diverse housing choices while protecting the established character of existing urban and rural neighborhoods.

The county's largest unincorporated communities are located in the western areas of the county, with access to water, sewer, roads, schools, and other public facilities. Focusing new development in and around existing unincorporated communities allows the County to maximize existing infrastructure, provides for efficient service delivery, and strengthens town center areas while preserving the rural landscape that helps define the unique character of the unincorporated county.

This strategy focuses on preserving open space and agricultural lands, and focusing density in the county villages. Conservation efforts will avoid GHG emissions from transportation and energy use associated with conveyance of water and solid waste services. Reductions in Vehicle Miles Traveled (VMT) resulting from this strategy will also improve air quality through reduced vehicle emissions and contribute to public health improvements by creating opportunities for active transportation choices.

T-1.1: Acquire Open Space Conservation Land

MEASURE SUMMARY

Acquire open space conservation lands consistent with current requirements of the County Multiple Species Conservation Program (MSCP) and future conservation efforts, including acquisition of 2,622 acres by 2020 and an additional 4,370 acres between 2021 and 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	3,303
2030 Anticipated GHG Reduction	5,771
2050 Anticipated GHG Reduction	5,291

DESCRIPTION

This measure is a County initiative. The County is recognized as one of the most diverse habitats for plants and animals in the U.S. and for having the highest number of species that are considered rare or endangered. Scientists have classified the County as one of two counties in the U.S. that are considered "hot spots" because of the unique and rare species. The MSCP has dual goals associated with habitat and species preservation and land development. The MSCP preserves San Diego's unique, native habitats and wildlife for future generations, and streamlines the permitting process for development projects. The MSCP ensures compliance with the federal Endangered Species Act, State Endangered Species Act, and State Natural Communities Conservation Planning Act.

The County initiated its MSCP in the early 1990's. The South County Subarea Plan was approved in 1997. Since the inception of the MSCP, the County has purchased properties from willing sellers within the County. The County purchases land that meets certain criteria that includes completing the planned preserve system for the region, providing critical wildlife corridor linkages, and preserving habitat functions. The Department of Parks and Recreation (DPR) manages the MSCP lands acquired by the County. Land preservation may take the form of an easement that dedicates the land for open space in perpetuity or actual purchase of fee title.

Acquisition of land by the County under the MSCP would reduce GHG emissions through preservation of land which can otherwise be developed. GHG emissions reductions are realized from reductions in transportation, energy use, waste, and water consumption. Preservation of these lands also helps protect watersheds, improve water quality, and preserves vegetation, which provides carbon sequestration benefits. Reductions for this measure are quantified based on the reduced development potential associated with preservation of lands. Future acquisitions beyond those targeted in this measure will reduce GHG emissions in the county, the benefit of which will be reflected in the County's biennial GHG inventory updates. The county's GHG emissions baseline inventory updates are further detailed in Chapter 5 of this document.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-1.1: Acquire Open Space Conservation Land (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Biological Resources
- Water Quality
- Energy Savings
- Carbon Sequestration
- Water Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Implement the South County MSCP and future additional conservation efforts	DPR & PDS	Ongoing	Low
Acquire 2,622 acres of open space conservation lands	DPR	2015-2020	Medium
Acquire 437 acres of open space conservation lands per year	DPR	2021-2030	Medium

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
2,622 acres of open space conservation lands acquired (equates to offsetting 184 dwelling units)	2015-2020
4,370 acres of open space conservation lands acquired (equates to offsetting 307 dwelling units)	2021-2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-1.2: Acquire Agricultural Easements

MEASURE SUMMARY

Acquire agricultural easements through an expanded Purchase of Agriculture Conservation Easement (PACE) Program, including acquisition of 443 acres of agricultural easements by 2020 and an additional 4,430 acres between 2021 and 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	323
2030 Anticipated GHG Reduction	2,330
2050 Anticipated GHG Reduction	2,136

DESCRIPTION

This measure is a County initiative. The PACE Program promotes the long-term preservation of agriculture in the County. Under the PACE Program, willing agricultural property owners are compensated for placing an easement on their agricultural property that limits future uses and extinguishes future development potential. As a result, the agricultural land is preserved and the property owner receives compensation that can make its continued use for agriculture more viable.

The San Diego County Board of Supervisors (Board) directed County staff to develop an agricultural preservation program on August 3, 2011, through the adoption of the County's General Plan. The Board established the PACE Program as an on-going County program on December 4, 2013.

This measure will preserve lands for agricultural use by expanding the eligibility criteria for the PACE Program to allow properties that did not realize a density reduction through the 2011 General Plan Update to participate voluntarily. Acquisition of agricultural easements by the County under the PACE Program will reduce GHG emissions through preservation of land that can otherwise be developed. GHG emissions reductions are realized from a reduction in transportation, energy use, waste, and water consumption. Reductions for this measure are quantified based on the reduced development potential associated with preservation of agricultural lands. Only reductions from the expanded PACE Program are quantified for this measure.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-1.2: Acquire Agricultural Easements (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Biological Resources
- Job Generation
- Energy Savings
- Carbon Sequestration

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Expand the eligibility criteria for the PACE Program	PDS	2020	Low
Acquire 443 acres of agricultural easements	PDS & DGS	2020	Medium
Acquire 443 acres of agricultural easements per year	PDS & DGS	2021-2030	Medium

SUPPORTING EFFORTS	TIME FRAME
Promote consumption of locally grown and raised food through public outreach and education, which may include working with procurements to have institutions buy local produce including County Operations procurements (e.g., the Psychiatric Hospital and Polinsky Center).	Ongoing
Collaborate with agricultural stakeholders and the University of California Cooperative Extension to develop conservation and sustainable agricultural farming practices, carbon farming methods, and other climate beneficial practices on agriculture lands and rangeland, including practices and incentives that reduce the impact and use of synthetic fertilizer	Ongoing
Explore sustainable manure management practices and incentives through promotion of the California Department of Food and Agriculture Dairy Digester Research and Development Program and the Alternative Manure Management Program	Ongoing
Explore funding opportunities and collaborations to provide information about the impact of food choices through public outreach and education	Ongoing
Implement and explore funding opportunities and collaborations to track the Eat Well Practices with an emphasis on less carbon-intense foods and more plant-based meals	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
443 acres of agricultural easements acquired (equates to offsetting 18 dwelling units)	2020
4,430 acres of agricultural easements acquired (equates to offsetting 180 dwelling units)	2021-2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-1.3: Update Community Plans

MEASURE SUMMARY

Focus growth in the county villages to achieve mixed-use, transit-oriented village centers by updating 15 community plans by 2030 and an additional 4 community plans between 2031 and 2040

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	20,923
2050 Anticipated GHG Reduction	27,913

DESCRIPTION

This measure is a County initiative. The community plan updates would incorporate a balanced approach to housing, jobs/economic development, services, and infrastructure needs. The community plan updates would achieve mixed-use and transit-oriented development within existing village centers.

The updates will define a core area within the county villages that would include affordable housing units; mixed-use development with possible mechanisms to increase density; "Complete Streets" that include sidewalk and bike lane improvements; shared parking; and parks and community services, which could include libraries, schools or community centers, located in the core area. Existing density would be emphasized in the core area using tools such as form-based code, and parking and setback reductions.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-1.3: Update Community Plans (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Job Generation
- Improved Mobility

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Update 15 community plans that include villages	PDS	2030	Medium
Update 4 community plans that include villages	PDS	2031-2040	Medium

SUPPORTING EFFORTS	TIME FRAME
Study the feasibility of developing an incentive-based transfer of development rights program	2030
Collaborate with the San Diego Association of Governments (SANDAG), the San Diego Metropolitan Transit System (MTS), and the North County Transit District (NCTD) to explore expansion of transit service to the unincorporated areas	Ongoing
Collaborate with incorporated cities, California Department of Transportation (Caltrans), and SANDAG to consider additional park-and-ride facilities	Ongoing
Promote weekly Certified Farmers' Markets to provide access to fresh, locally grown produce to County residents, such as working with Farmers' Markets to accept EBT cards to make access for our vulnerable populations available.	Ongoing
Promote the adoption of the Eat Well Practices by outside organizations to support climate beneficial practices	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
15 community plan updates completed	2030
4 community plan updates completed	2031-2040

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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Strategy T-2: Shift Towards Alternative Modes of Transportation

Fossil fuel-based transportation is the largest emission sector in the County's inventory. Therefore, reducing the number of single-occupancy vehicle trips and shifting trips to alternative modes such as biking, walking, and ridesharing will be a key strategy for the County to achieve its GHG reduction targets. The County can play an important role in providing mobility options and removing obstacles to individuals selecting non-vehicle mode choices, in coordination with state and regional partners. The County can also influence commute trips, both in the community and in its own operations, by implementing transportation demand management (TDM) strategies.

This strategy focuses on implementing infrastructure improvements to promote active transportation, and understanding commuters' transportation decisions in order to help people use the infrastructure in place for transit, ridesharing, walking, biking, and telework. The strategy also includes measures that sets performance standards for reducing employee commute trips at County facilities, parking management, and focusing development in the county villages.

Reducing transportation emissions has a beneficial effect of improving public and community health through both enhanced air quality and mobility, and cost savings for community members by reducing fuel use.

T-2.1: Improve Roadway Segments as Multi-Modal

MEASURE SUMMARY

Improve roadway segments, intersections, and bikeways to implement multi-modal enhancements for pedestrian and cyclist comfort and safety along County-maintained public roads by improving 700 centerline miles of roadway segments, including 250 intersections and 210 lane miles of bikeway improvements by 2030 and an additional 500 centerline miles of roadway segments, including 250 intersections and 210 lane miles of bikeway improvements by 2050.

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	604
2050 Anticipated GHG Reduction	1,292

DESCRIPTION

This measure is a County initiative. Implementing multi-modal enhancements as part of a "Complete Streets" approach serves to reduce Vehicle Miles Traveled (VMT) and encourage pedestrian and cyclist trips by creating a more comfortable and safer experience when traveling along public roads. Specific improvements may include: ADA curb ramps, marked crosswalks, countdown signal timers, curb extensions, speed tables, speed humps, raised crosswalks, raised intersections, median islands, tight corner radii, mini-circles, on-street parking, reduced travel lane widths, planter strips with street trees, chicanes/chokers, bike lanes, cycle tracks, and protected bikeways.

As part of road resurfacing projects funded by the increased gas tax generated by SB-1, this measure will implement multi-modal enhancements to improve pedestrian comfort on roadway segments, including improvements at intersections and bikeway improvements. Multi-modal enhancements will be implemented where feasible. Such enhancements will occur only within the existing paved areas and will not require any road widening or acquisition of right-of-way.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.1: Improve Roadway Segments as Multi-Modal (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Community Health
- Improved Mobility

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Improve 700 centerline miles of roadway segments, including 250 intersections and 210 lane miles of bikeway improvements	DPW	2030	High
Improve 500 centerline miles of roadway segments, including 250 intersections and 210 lane miles of bikeway improvements	DPW	2031-2050	High

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
700 centerline miles improved, including 250 intersections and 210 lane miles of bikeways	2030
500 centerline miles improved, including 250 intersections and 210 lane miles of bikeways	2031-2050

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.2: Reduce Emissions from New Non-Residential Development Vehicle Miles Traveled

MEASURE SUMMARY

Reduce emissions from commute Vehicle Miles Traveled (VMT) in new non-residential development by 15% by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	2,180
2050 Anticipated GHG Reduction	3,762

DESCRIPTION

This measure is a requirement. Through the Regional Transportation Plan model, the San Diego Association of Governments (SANDAG) has projected the future number of commute VMT for the unincorporated county.

This measure helps to reduce commute trips within the unincorporated areas of the county. A Transportation Demand Management (TDM) Ordinance will define the minimum trip generation requirements for new non-residential development projects and include a monitoring and reporting mechanism to demonstrate on-going compliance and ensure enforcement.

Trip reduction measures may include telecommuting, car sharing, vanpools, carpools, shuttle service, bicycle parking facilities, and transit subsidies.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.2: Reduce Emissions from New Non-Residential Development Vehicle Miles Traveled (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Cost Savings
- Community Health
- Improved Mobility

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend the San Diego County Code of Regulatory Ordinances to include a Transportation Demand Management (TDM) Ordinance	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
Provide information about existing ridesharing services to local employers	Ongoing
Encourage employers to implement a guaranteed ride home program	Ongoing
Promote and educate residents about ride matching programs and services	Ongoing
Monitor State efforts related to the California Road Charge Pilot Program through the Department of Planning & Development Services	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
New non-residential commute VMT reduced by 15%	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.3: Reduce County Employee Vehicle Miles Traveled

MEASURE SUMMARY

Reduce County employee commute Vehicle Miles Traveled (VMT) by 20% by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	7,473
2050 Anticipated GHG Reduction	7,783

DESCRIPTION

This measure is a County initiative. This measure reduces County employee commute VMT by increasing reliance on alternative modes of transportation and encouraging participation in alternative work schedules or telecommute options. The County currently subsidizes monthly transit passes, vanpool, and carpool services for employees in an effort to reduce air pollution, and ease traffic and parking congestion.

This measure builds upon the County's existing Government Without Walls (GWOW) Program, which helps both management and employees look for ways to provide services more efficiently and effectively by changing where and when County employees work. It may take the form of employees working at alternative locations, working in the field or working an alternative schedule. Creating a County workforce capable of working from remote locations will make the County better prepared to continue delivering services if an emergency requires staff to perform duties at alternative sites.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.3: Reduce County Employee Vehicle Miles Traveled (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Cost Savings
- Community Health
- Improved Mobility

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Conduct additional outreach to increase participation in the County's vanpool, carpool, and transit pass subsidy programs, and the GWOW Program	DHR & DGS	Ongoing	Medium

SUPPORTING EFFORTS	TIME FRAME
Encourage employees to participate in the San Diego Association of Governments' (SANDAG) iCommute Program	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
County employee commute VMT reduced by 20% below 2014 levels	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.4: Shared and Reduced Parking in New Non-Residential Development

MEASURE SUMMARY

Require shared and reduced parking for all new non-residential development to reduce new commute Vehicle Miles Traveled (VMT) by 10% by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	1,392
2050 Anticipated GHG Reduction	2,403

DESCRIPTION

This measure is a requirement. Shared parking is a parking management tool that allows parking facilities to be used more efficiently by sharing spaces with more than one user. Most parking spaces are only used part-time and a significant portion of many parking facilities are underutilized.

Through this measure, the County will update the Zoning Ordinance to require shared parking facilities for uses in new non-residential development that have staggered parking demands at different times of the day. In addition, the updated Zoning Ordinance will address reductions in standard parking requirements for employee parking, and will establish minimum requirements for carpool/vanpool, shuttle, and Electric-Vehicle-only parking spaces. This measure will be enforced through the County's current permitting process.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-2.4: Shared and Reduced Parking in New Non-Residential Development (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Cost Savings
- Improved Mobility

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend the San Diego County Zoning Ordinance	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
New non-residential commute VMT reduced by 10%	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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Strategy T-3: Decarbonize On-road and Off-road Vehicle Fleet

On-road and off-road transportation contributed 45% of the emissions in the unincorporated county in 2014. Transitioning from fossil-fuel based on-road and off-road vehicles to alternative fuel technologies is a key strategy at the state and local level for reducing emissions.

This strategy focuses on "decarbonizing" transportation, which refers to reducing carbon dioxide emissions from both on-road and off-road vehicles. This strategy emphasizes transitioning fossil fuel-based County fleet vehicles and equipment to alternative fuels such as renewable diesel, renewable natural gas, and electric, and facilitating the replacement of older on-road vehicles to meet state and federal fuel economy standards. This strategy emphasizes opportunities to transition County construction equipment fuel types from petroleum-diesel to renewable diesel, as well as their conversion to electric or hybrid-electric options, including bulldozers, excavators or loaders, all of which are available on the market. The County can also help accommodate the increasing number of electric vehicles (EVs) in the on-road fleet by investing in charging infrastructure and encouraging additional EV purchases.

Reducing transportation emissions has a beneficial effect of improving public and community health through both enhanced air quality and mobility, and cost savings for community members by reducing fuel use.

T-3.2: Use Alternative Fuels in County Projects

MEASURE SUMMARY

Require County projects to use alternative fuels in 100% of construction equipment during construction by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	364
2050 Anticipated GHG Reduction	369

DESCRIPTION

This measure is a County initiative. Construction emissions can be reduced by replacing fossil fuels used in construction equipment with alternative fuels, such as renewable diesel, renewable natural gas or compressed natural gas (CNG). The County will implement the 2016 Green Fleet Action Plan Implementation Strategy to achieve GHG reductions from the County's construction equipment fleet by transitioning from petroleum diesel to renewable diesel.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.2: Use Alternative Fuels in County Projects (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Community Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Implement the 2016 Green Fleet Action Plan Implementation Strategy	DGS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
Develop strategies to address barriers to alternative fuel deployment	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
100% of construction equipment in-use during construction of County projects utilize alternative fuels	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.3: Develop a Local Vehicle Retirement Program

MEASURE SUMMARY

Retire 1,600 late-model vehicles (model year 1996 or older) in the unincorporated county by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	446
2050 Anticipated GHG Reduction	0

DESCRIPTION

This measure is an incentive. The local vehicle retirement program will provide a cash incentive to residents or businesses in the unincorporated county retiring their passenger vehicle or light-duty truck that is model year 1996 or older (including sports utility vehicles and vans) to a contracted auto-scrapping facility. The program anticipates 1,600 late-model vehicles to be retired within the unincorporated areas of the county. This incentive will retire older polluting passenger vehicles or light-duty trucks by providing cash incentives to drivers in order to purchase newer, more fuel-efficient vehicles. Existing San Diego County Air Pollution Control District (SDAPCD) revenue sources could be used to fund this program.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.3: Develop a Local Vehicle Retirement Program (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Community Health
- Cost Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Develop a local vehicle retirement program	SDAPCD	2020	Low
Retire 1,600 late-model vehicles (model year 1996 or older)	SDAPCD	2030	Medium

SUPPORTING EFFORTS	TIME FRAME
Develop and implement a local Electric Vehicle (EV) Incentive Program	2030
Install Level 2 EV charging stations in the unincorporated County through a partnership with the local utility.	2030
Provide information to multi-family and non-residential property/business owners to leverage the local utility's EV resources	Ongoing
Collaborate with SANDAG to encourage installation of EV charging stations in new residential and non-residential developments	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
1,600 late-model vehicles (model year 1996 or older) retired	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.4: Reduce the County's Fleet Emissions

MEASURE SUMMARY

Reduce the County fleet's GHG emissions levels, including on-road and non-construction off-road vehicles, by 10% by 2020 and 20% by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	2,394
2030 Anticipated GHG Reduction	3,673
2050 Anticipated GHG Reduction	3,411

DESCRIPTION

This measure is a County initiative. The County's Strategic Energy Plan (SEP) aims to ensure that sustainability practices are integrated into the County's operations, including County-owned vehicles. The County of San Diego operates a fleet of approximately 4,200 vehicles and equipment, of which 2,500 vehicles are considered light duty. These assets vary in type and operating requirements greatly. Through implementation of the Green Fleet Action Plan Implementation Strategy, the County will expand use of alternative fuels, encourage vehicle reductions, and make improvements in departmental efficiencies.

Of the County's 2,500 light duty vehicles, 1,100 vehicles are eligible to be considered for conversion to PHEV/EV based on current available market technologies. A subset of the eligible vehicles cannot be converted to PHEV/EV due to operational constraints; therefore, to achieve the 2030 target, 23% of the eligible vehicles (or 10% of the entire light duty fleet) will be transitioned to EVs and PHEVs by 2025. In addition, the County will convert 50% of all new vehicle purchases to their target green vehicle replacement standard by 2020 and 75% by 2025; transition from petroleum diesel to renewable diesel by 2020; develop alternative infrastructure at rural County facilities by 2025; reduce the County fleet by 20 vehicles by 2020 and by 40 vehicles by 2025; and implement tools and technologies that assist departments to increase operational efficiency and decrease fuel consumption.

The County will update the SEP and the Green Fleet Action Plan Implementation Strategy to incorporate the 2030 GHG reduction target identified in this measure.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.4: Reduce the County's Fleet Emissions (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Community Health
- Cost Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Implement the County's Strategic Energy Plan and the Green Fleet Action Plan Implementation Strategy	DGS	2015-2020	Medium
Update the County's Strategic Energy Plan and the Green Fleet Action Plan Implementation Strategy	DGS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
County fleet GHG emissions reduced by 10%	2020
County fleet GHG emissions reduced by 20%	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.5: Install Electric Vehicle Charging Stations

MEASURE SUMMARY

Install 2,040 Level 2 electric vehicle charging stations (EVCS) through public-private partnerships at priority locations in the unincorporated county by 2030.

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	11,987
2050 Anticipated GHG Reduction	10,100

DESCRIPTION

This measure is a County initiative. Electrifying Vehicle Miles Traveled (VMT) allows for the use of cleaner and renewable energy to power vehicles, and reduces GHG emissions associated with gasoline-powered internal combustion engines. . Investment in a larger charging network than currently exists is needed to encourage electric vehicle (EV) use and achieve additional GHG reductions beyond State goals. This measure increases the availability of EV charging infrastructure in order to increase the number of VMT that are electric- over gasoline-powered.

This measure builds upon the State's goal to increase the number of zero-emission vehicles (which include EVs) to 1.5 million by 2025. Future demand for charging stations will likely correlate with the future number of EVs. Approximately 20,400 EVs are expected in the unincorporated areas of the county by 2030. According to SANDAG, there were 19,000 plug-in vehicles (including EVs and plug-in hybrids) in the San Diego region as of 2016; that number is expected to grow to more than 90,000 by 2020 (SANDAG 2016).

Through this measure, the County will establish a program to designate priority areas, identify funding, and install a total of 2,040 Level 2 charging stations with a minimum power rating of 6.6 kW in the unincorporated county by 2030. During the development of the program, a pilot project will be established to install 100 of the 2,040 EVCS by 2025.

In 2015, the County Board of Supervisors approved the Solar and Electric-Vehicle Ready Ordinance that set requirements for new residential development to install conduit to accommodate future EV charging. To facilitate the next step for installation of EVCS in residences, the County will support programs from the local utility and collaborate with regional partners to install EVCS, and provide marketing, promotion, and education about available programs for EVs and EV charging infrastructure. For example, a relevant program is the Electric Vehicle Climate Credit, part of a statewide greenhouse gas reduction program administered by the California Air Resources Board that offers a utility credit for driving a clean vehicle.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-3.5: Install Electric Vehicle Charging Stations (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Cost Savings
- Community Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Develop a program to install electric vehicle charging stations (EVCS) in priority areas and establish a pilot project to install 100 Level 2 charging stations	APCD, DGS, DPR, DPW	2020-2025	High
Install 1,940 Level 2 charging stations	APCD, DGS, DPR, DPW	2025-2030	High

SUPPORTING EFFORTS	TIME FRAME
Provide education and marketing related to the purchase of electric vehicles (EVs), available charging infrastructure, and existing EV resources and programs	Ongoing
Develop and implement a local EV Incentive Program	2030
Collaborate with regional partners to encourage installation of EVCS in new residential and non-residential developments	Ongoing
Promote the State's Electric Vehicle Climate Credit	Ongoing
Support programs from the local utility to install EVCS	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
2,040 Level 2 electric vehicle charging stations installed in the unincorporated county	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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Strategy T-4: Invest in Local Projects to Offset Carbon Emissions

This strategy represents the County's adaptive management tool to make adjustments based on CAP performance and still achieve established GHG reduction targets. The County acknowledges that the suite of measures specified in this CAP may need to be continuously monitored and adjusted to stay on target pursuant to CEQA Guidelines Section 15183.5(b)(1)(E). See Chapter 5 for details on the County's monitoring strategy. This strategy would allow the County to make direct investments in local GHG reduction projects to make adjustments to stay on target.

Projects that offset carbon emissions involve specific actions that reduce, avoid or sequester GHG emissions. Such projects must comply with established protocols that have been approved by the California Air Resources Board (CARB), the California Air Pollution Control Officers Association (CAPCOA) or the San Diego County Air Pollution Control District (SDAPCD) that were subject to an intensive multi-stakeholder process and public review prior to adoption. Adherence to the protocols ensures that the carbon reductions generated by the project are real, permanent, quantifiable, verifiable, and enforceable. Protocols to consider include Boiler Efficiency, Coastal Wetlands Creation, Reforestation, Forest Preservation, Compost Additions to Rangeland, and Winterization (energy efficiency upgrades).

T-4.1: Establish a Local Direct Investment Program

MEASURE SUMMARY

Close the 2030 GHG emissions reductions target gap of 176,614 $MTCO_2e$ through direct investments in local projects that would reduce carbon emissions within the unincorporated county by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	176,614
2050 Anticipated GHG Reduction	0

DESCRIPTION

This measure is a County initiative. Direct investments are not required for the County to meet its 2020 GHG reduction target. This measure provides the County with an adaptive management tool to reduce GHG emissions and meet the established 2030 target. Progress toward the 2030 target will be monitored over time, and through future CAP updates the level of local direct investments can be adjusted as needed to achieve the 2030 target reductions. During these future updates, the County will also reevaluate offsets needed post-2030. The County will collaborate with the San Diego County Air Pollution Control District (SDAPCD) to develop and implement a local direct investment program by establishing an independent registry or joining an existing registry, such as the California Air Pollution Control Officers Association (CAPCOA) Greenhouse Gas Reduction Exchange (GHG Rx), using protocols approved by the California Air Resources Board (CARB), such as the GHG Rx, Climate Action Reserve, Verified Carbon Standard, and/or American Carbon Standard (see Appendix B of the Supplemental Environmental Impact Report for the CAP).

The County will fund/implement and register the direct investment projects with the GHG registry. SDAPCD, or a third-party verifier, will verify emissions reductions from the County's direct investment projects in accordance with governing protocols established for offset projects. The verifying entity will ensure that the County's direct investment projects have retired the specified amount of GHG emissions rather than selling the GHG credits on the registry market. Retired credits will not be available for purchase by third parties as they would have been retired by the County in perpetuity. The GHG registry will only register GHG projects that yield surplus GHG emission reductions (i.e., GHG reductions beyond what will occur under business-as-usual operations and reductions not mandated by regulations or otherwise required). By directly investing in projects within the County that will reduce emissions, the County would achieve GHG reductions and provide local co-benefits.

While not required to help the County meet the established 2030 target, property owners could also take advantage of the registry by retiring or selling mitigation credits on the market. Property owners with General Plan Amendment projects that are unable to fully mitigate or offset their GHG impacts would be able to purchase GHG credits from the registry, if available, as necessary to fulfill applicable regulatory requirements to mitigate any potential impacts to the County's CAP.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

T-4.1: Establish a Local Direct Investment Program (continued)

RELATED LEGISLATION

State
- Cap-and-Trade
- CARB-approved offset registries

CO-BENEFITS

- Air Quality
- Public Health
- Carbon Sequestration
- Job Generation
- Energy Savings
- Water Savings
- Biological Resources
- Community Health
- Water Quality
- Cost Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Establish a local direct investment program	SDAPCD	2020	Low
Fund, implement, register, and verify direct investment projects	SDAPCD & PDS	2021-2030	High

SUPPORTING EFFORTS	TIME FRAME
Encourage development of carbon offset projects to capture the co-benefits locally and encourage participation of these projects in a local carbon offset registry	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
176,614 $MTCO_2e$ in carbon credits verified and retired	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

Energy

The energy (electricity and natural gas) used in buildings is a significant contributor to GHG emissions in the unincorporated county, accounting for approximately 33% of total emissions in 2014. The CAP's Energy measures will contribute:

- 24% of GHG reductions estimated for 2020;
- 31% of GHG reductions needed to meet the 2030 target (Figure 3.4); and
- 31% of GHG reductions estimated for 2050.

The Energy category offers the greatest opportunity to achieve emissions reductions across the five categories. The energy measures included in the CAP aim to further reduce emissions by improving energy efficiency requirements, streamlining access to renewable energy, and increasing the supply of renewable energy for homes and businesses within the county. The success of these measures relies on coordination with local utilities and organizations, participation from the community, and administration of new or revised local policies and programs. Major measures include achievement of 90% renewable energy in the county by 2030, increased installation of rooftop photovoltaics (PV) in new and existing development, and a water heater replacement program.

The Energy category is composed of two strategies and five measures with supporting efforts:

Strategy E-1: Increase Building Energy Efficiency

- Measure E-1.2: Use Alternatively-powered Water Heaters in Residential Development
- Measure E-1.4: Reduce Energy Use Intensity at County Facilities

Strategy E-2: Increase Renewable Electricity Use

- Measure E-2.1: Increase Renewable Electricity
- Measure E-2.3: Install Solar Photovoltaics in Existing Homes
- Measure E-2.4: Increase Use of On-Site Renewable Electricity Generation for County Operations

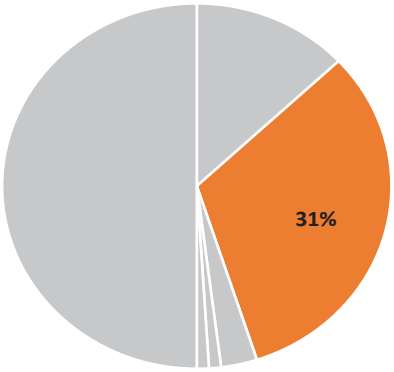

Figure 3.4 Energy Reductions for 2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

Strategy E-1: Increase Building Energy Efficiency

The energy used in buildings is a significant contributor to emissions in the county, accounting for approximately 33% of total emissions in 2014. The Energy category offers the greatest opportunity to achieve emissions reductions across the five categories.

This strategy focuses on opportunities to improve energy efficiency in residential buildings and County facilities. Energy savings from efficiency measures translate to lower utility bills for consumers while improving air quality and providing public and community health co-benefits.

The measures in this strategy work together with the measures in Strategy E-2 (Increase Renewable Electricity Use) to reduce electricity consumption from fossil fuels in buildings. Energy efficiency improvements reduce the amount of energy consumed in buildings, and increasing renewable electricity ensures that the balance of electricity consumed is generated from renewable sources.

E-1.2: Use Alternatively-powered Water Heaters in Residential Development

MEASURE SUMMARY

Require all new and replacement water heaters in residential development to be either solar, electrically-powered, or tankless gas by 2020

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	21,018
2050 Anticipated GHG Reduction	21,945

DESCRIPTION

This measure is a requirement, and will include a subsidy for replacement water heaters for participants meeting certain income criteria. The average life span of a residential natural gas water heater is 13 years. This measure will require all new and replacement water heaters to transition away from tank-based natural gas systems. The County will develop a program for existing homeowners meeting certain income criteria to reduce the cost to replace natural gas tank-based water heaters with solar, electric, or tankless gas. The measure will be enforced through the County's current permitting processes. Replacement natural gas tank-based water heaters will no longer be permitted under this new ordinance. Alternative allowable new water heaters can include solar water heaters, tankless and storage electric water heaters, electric heat pump systems, and tankless gas water heaters. Conversion away from natural gas-fueled water heaters also allows for additional opportunities to reduce emissions with renewable electricity generation.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-1.2: Use Alternatively-powered Water Heaters in Residential Development (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Cost Savings
- Energy Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes)	PDS	2020	Low
Develop a program for existing homeowners meeting certain income criteria to reduce the cost to replace natural gas tank-based water heaters with solar, electric, or tankless gas	PDS	2020	Medium

SUPPORTING EFFORTS	TIME FRAME
Continue to implement the County's Green Building Incentive Program	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
All new and replacement water heaters in residential development are solar, electrically-powered, or tankless gas	2020

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-1.4: Reduce Energy Use Intensity at County Facilities

MEASURE SUMMARY

Reduce energy use intensity at County facilities by 10% below 2014 levels by 2020 and by 20% below 2014 levels by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	6,486
2030 Anticipated GHG Reduction	10,702
2050 Anticipated GHG Reduction	11,578

DESCRIPTION

This measure is a County initiative. The County's Strategic Energy Plan (SEP) aims to ensure that sustainability practices are integrated into the County's organization and to minimize utility consumption and costs. This measure applies to County-owned and leased facilities, and includes a 10% reduction in energy use intensity below 2014 levels at County facilities by 2020 and a 20% reduction in energy use intensity below 2014 levels by 2030.

This measure will be implemented through the County's SEP Energy Use Strategy, which includes taking advantage of energy audits, rebates, and incentives offered by local utilities; implementing energy efficiency improvement and retrofit projects; evaluating new technologies that can help reduce energy consumption; and implementing a County demand response program to curtail energy use during periods of high energy demand. In addition, the County will update the SEP to incorporate the 2030 GHG reduction target.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-1.4: Reduce Energy Use Intensity at County Facilities (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Job Generation
- Cost Savings
- Energy Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Implement the County's Strategic Energy Plan (SEP) to achieve a 10% reduction in energy use intensity at County facilities below 2014 levels	DGS	2020	Medium
Update the County's SEP to incorporate a 20% reduction in energy use intensity at County facilities below 2014 levels	DGS	2030	Low

SUPPORTING EFFORTS	TIME FRAME
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
Energy use intensity at County facilities is reduced by 10% below 2014 levels	2020
Energy use intensity at County facilities is reduced by 20% below 2014 levels	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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Strategy E-2: Increase Renewable Electricity Use

Transitioning from fossil fuels to renewable energy for electricity generation will reduce emissions and provide a more sustainable source of electricity. This strategy focuses on increasing the amount of onsite renewable electricity at existing and new residential and non-residential development, including at County facilities. In addition, the strategy also establishes a Renewable Energy Program to achieve 90% renewable electricity county-wide by 2030.

Renewable energy sources do not generate air emissions and have the co-benefit of improving public and community health. Onsite renewable electricity can also help consumers become self-sufficient and reduce their utility bills, resulting in cost savings. Increased renewable electricity production, both through distributed generation and large-scale facilities, can help generate green jobs locally.

The measures in this strategy work together with the measures in Strategy E-1 (Increase Building Energy Efficiency) to reduce energy consumption from fossil fuels in buildings. Energy efficiency improvements reduce the amount of energy consumed in buildings, and increasing renewable electricity ensures that the balance of electricity consumed is generated from renewable sources.

E-2.1: Increase Renewable Electricity

MEASURE SUMMARY

Achieve 90% renewable electricity for the unincorporated county by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	255,991
2050 Anticipated GHG Reduction	340,245

DESCRIPTION

This measure is a County initiative. In 2002, the State established the California Renewables Portfolio Standard (RPS), which is a set of regulations that requires electricity supply companies (i.e., investor-owned utilities, electric service providers, and community choice aggregators) to produce a certain share of their electricity from renewable sources. The RPS requires that 33% of the electricity be from renewable sources by 2020 and 50% by 2030. San Diego Gas & Electric (SDG&E) is the local investor-owned utility in San Diego County, providing the majority of electricity to the County's businesses and residents. According to the California Public Utilities Commission (PUC), by 2020, 45% of SDG&E's electricity will come from renewable sources. SDG&E also relies on natural gas to generate electricity for its customers.

This measure will achieve 90% renewable electricity for the unincorporated county by 2030 to lower GHG emissions by relying on cleaner electricity. This measure will exceed the State's RPS requirements for 2030. The renewable electricity generated to achieve 90% reflects only the electricity transmitted through the grid and does not include electricity generated by individual sources, such as a home with rooftop solar or wind. This target will be achieved through the establishment of a Renewable Energy Program, which could include a partnership with SDG&E, Community Choice Aggregation or another similar program. The County could also investigate opportunities to develop a regional or joint effort with other jurisdictions seeking to achieve similar renewable energy goals through a partnership (e.g., Joint Powers Authority). A Renewable Energy Program will allow the County to purchase power on behalf of its residents and businesses to provide cleaner power options, as enabled by State policy. Under this program, SDG&E would still transmit and distribute electricity to County residents and businesses.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-2.1: Increase Renewable Electricity (continued)

RELATED LEGISLATION

State
Renewable Portfolio Standard (RPS)

CO-BENEFITS

- Air Quality
- Public Health
- Job Generation
- Community Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Establish a Renewable Energy Program	PDS & DGS	2025	High

SUPPORTING EFFORTS	TIME FRAME
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
Electricity from renewable sources accounts for 90% of the unincorporated county's electricity consumption	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-2.3: Install Solar Photovoltaics in Existing Homes

MEASURE SUMMARY

Increase installation of photovoltaic (PV) electrical systems in 52,273 existing homes by 2020 and an additional 77,902 homes by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	114,571
2030 Anticipated GHG Reduction	260,322
2050 Anticipated GHG Reduction	260,322

DESCRIPTION

This measure is an incentive. The County is committed to supporting solar energy development as demonstrated by the following existing initiatives and programs, which provide a framework for achieving increased PV installation in existing homes:

- Online solar PV permitting: In 2013, the County launched a new tool allowing online processing of residential roof-mount solar PV permits. This online process has saved homeowners and PV installers time and money. Since 2013, roughly 80% of solar PV permits have been processed online. In 2014, the program was expanded to include electrical permits for panel upgrades. In 2015, the County Board of Supervisors adopted an ordinance codifying this expedited permitting process for small residential roof-mount solar PV systems. In 2017, the online PV permitting process was expanded to include Energy Storage and Battery Backup systems.
- County innovation initiatives: In 2013, in an effort to streamline both plan checks and inspections, the County developed pre-approved new product lists and compatibility resources. These tools significantly expedite both permit issuance and inspection processes by clearly identifying key product details while allowing for substitutions of similarly listed products without a lengthy plan-change process.
- Solar and Electrical Vehicle (EV) Ready Ordinance: In 2015, the County Board of Supervisors approved provisions requiring all new single-family homes to reserve south-facing roof space, install conduit, and provide sufficient electrical panel size to accommodate future roof-mount solar and EV charging.

Based on the County's historical PV permitting data, it is projected that 52,273 existing homes will install PV by 2020 and an additional 77,902 existing homes will install PV by 2030. The County initiatives and programs described here will continue to support the environment for solar energy development in the county.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-2.3: Install Solar Photovoltaics in Existing Homes (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Cost Savings
- Public Health
- Job Generation

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Continue the online solar PV permitting, County innovation initiatives, and the Solar and EV Ready Ordinance	PDS	2020-2030	Low

SUPPORTING EFFORTS	TIME FRAME
Collaborate with regional partners to provide outreach and education to property owners on renewable energy systems financing programs	Ongoing
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing
Collaborate with San Diego Gas & Electric and PV developers to increase battery storage capacity in the unincorporated county to maximize use of on-site solar	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
52,273 existing homes with PV electrical systems	2020
77,902 existing homes with PV electrical systems	2021-2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-2.4: Increase Use of On-Site Renewable Electricity Generation for County Operations

MEASURE SUMMARY

Generate 10% of the County's operational electricity on-site with renewables by 2020 and 20% by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	4,083
2030 Anticipated GHG Reduction	5,417
2050 Anticipated GHG Reduction	5,417

DESCRIPTION

This measure is a County initiative. Currently, 2.8% of the County's electricity is generated by solar photovoltaic (PV) systems at County facilities. Most of the County's electricity is purchased through Direct Access (i.e., direct purchase of electricity from electric service providers) rather than through the local utility. Where measure E-2.1 addresses increasing the share of renewable electricity distributed through the grid, this measure (E-2.4) aims to increase the County's use of renewables through on-site development rather than Direct Access contracts. This will be accomplished through Power Purchase Agreements (PPAs) and other funding mechanisms that would fund development of on-site renewable electricity systems. In 2016, the County Board of Supervisors authorized staff to negotiate and execute one or more PPAs for the development and operation of a roughly 13-megawatt PV system, and one or more battery storage facilities at multiple County sites. A PPA is a financial agreement between the County and a renewable electricity developer. Through this agreement, a developer designs, finances, and installs a renewable electricity system on County-owned property and sells the renewable power generated back to the County. The benefits of PPAs include no or low upfront capital costs to the County, reduced energy costs through fixed electricity rates, and limited risk as the developer is responsible for operation and maintenance of the system.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

E-2.4: Increase Use of On-Site Renewable Electricity Generation for County Operations (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Public Health
- Job Generation

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Develop County renewable electricity projects through Power Purchase Agreements and other funding mechanisms that would fund development of on-site renewable electricity systems	DGS	2015-2030	Medium

SUPPORTING EFFORTS	TIME FRAME
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
10% of the County's operational electricity generated on-site with renewables	2020
20% of the County's operational electricity generated on-site with renewables	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

Solid Waste

The Solid Waste sector accounted for approximately 11% of the County's emissions in 2014. The CAP's Solid Waste measure will contribute:

- zero percent of GHG reductions estimated for 2020;
- four percent of GHG reductions needed to meet the 2030 target (Figure 3.5); and
- four percent of GHG reductions estimated for 2050.

The measure under this strategy builds upon the County's Strategic Plan to Reduce Waste (Strategic Plan). On April 26, 2017, the Board approved "Option 3" of the Strategic Plan, which set a 75% waste diversion target by 2025. The measure aims to reduce emissions by encouraging expansion of other waste diversion programs in the county and exceeding the state's waste diversion target. Landfills located within the county already have landfill gas capture operations in place.

Solid Waste emissions reductions depend on expansion of County waste reduction, recycling, and composting programs; and participation from county residents and businesses to reduce waste and increase recycling.

The Solid Waste category is composed of one strategy and one measure:

Strategy SW-1: Increase Solid Waste Diversion in the Unincorporated County

- Measure SW-1.1: Increase Solid Waste Diversion

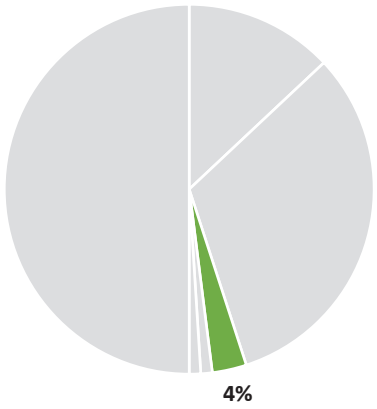

Figure 3.5 Solid Waste Reductions for 2030

Strategy SW-1: Increase Solid Waste Diversion in the Unincorporated County

The unincorporated area generated 449,323 tons of waste in 2014. Emissions from solid waste generation and waste-in-place already at landfills accounts for 11% of total emissions in 2014.

This strategy focuses on diverting a greater percentage of community-generated waste from landfills, through such methods as increased recycling and composting. On April 26, 2017, the Board approved "Option 3" of the Strategic Plan to Reduce Waste. This option establishes a 75% diversion target to be achieved by 2025 for the unincorporated area. This strategy builds upon this recent Board action as a measure by increasing the target to an 80% diversion rate by 2030 for the unincorporated areas.

Although the County does not collect solid waste from the community, it influences and supports waste diversion in the private sector through its solid waste management agreements with solid waste collectors, policies, programs, and ordinances. The County's focus on achieving increased waste diversion targets is advantageous for several reasons:

- The State Legislature set a State-wide 75% landfill diversion policy goal in 2011 and passed several pieces of legislation in the past six years supporting this goal, including a goal of achieving 75% diversion of organic materials by 2025.
- Materials diverted from landfill disposal will reduce methane and other greenhouse gases (GHG).
- Increased diversion will extend the capacity of local landfills, avoiding high transportation costs to distant landfills or siting new landfills.

This measure will result in additional private sector jobs created to support the various waste diversion activities needed to achieve the solid waste reduction target.

SW-1.1: Increase Solid Waste Diversion

MEASURE SUMMARY

Achieve 80% solid waste diversion in the unincorporated county by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	79,052
2050 Anticipated GHG Reduction	86,052

DESCRIPTION

This measure is a County initiative. On April 26, 2017, the San Diego County Board of Supervisors (Board) established a 75% waste diversion target by 2025 for the unincorporated county through implementation of the Strategic Plan to Reduce Waste. This plan contains over 15 individual programs and initiatives that focus on different waste types and sources, such as reducing food and other organic waste generated from residential and commercial uses. Through this measure, the County will continue to implement the Strategic Plan to Reduce Waste to achieve additional reductions through 2030.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

SW-1.1: Increase Solid Waste Diversion (continued)

RELATED LEGISLATION

State
- Assembly Bill 939
- Assembly Bill 341
- Assembly Bill 1826
- Senate Bill 1383

CO-BENEFITS

- Job Generation
- Community Health
- Energy Savings
- Water Quality
- Carbon Sequestration

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Implement the County's Strategic Plan to Reduce Waste and increase solid waste diversion	DPW, DGS, PDS, DEH, & DPC	2030	High

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
80% of the unincorporated county's solid waste is diverted from landfills	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

Water and Wastewater

Although water and wastewater-related GHG emissions accounted for less than five percent of the County's emissions in 2014, additional water conservation is needed to address serious periodic drought issues that frequently affect the region and the State. As discussed further in Chapter 4, drought conditions could increase in frequency and severity over the long term.

Water and wastewater-related measures included in this CAP will reduce both the strain on water supplies and GHG emissions from pumping and treatment activities. The CAP's Water and Wastewater measures will contribute:

- less than 0.1% of GHG reductions estimated for 2020;
- one percent of GHG reductions needed to meet the 2030 target (Figure 3.6); and
- one percent of GHG reductions estimated for 2050.

The measures proposed under this strategy will reduce emissions primarily through water conservation in new and existing facilities. Measures involve revising the County's current ordinances that relate to both indoor and outdoor water efficiency and conservation and providing incentives to encourage rainwater reuse. Emissions reductions from these measures rely on successful coordination with and participation from County residents and businesses.

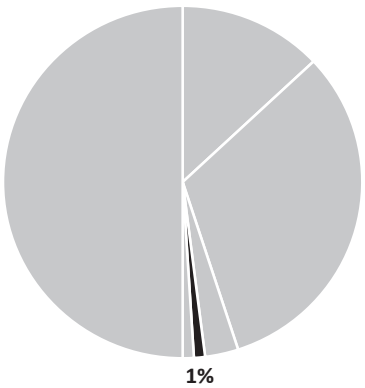

Figure 3.6 Water and Wastewater Reductions for 2030

The Water and Wastewater category is composed of two strategies and four measures with supporting efforts:

Strategy W-1: Reduce Potable Water Consumption

- Measure W-1.1: Increase Water Efficiency in New Residential Development
- Measure W-1.2: Reduce Outdoor Water Use
- Measure W-1.3: Reduce Potable Water Consumption at County Facilities

Strategy W-2: Increase Rainwater Use

- Measure W-2.1: Increase Rain Barrel Installations

Strategy W-1: Reduce Potable Water Consumption

Water consumption in the county results in indirect electricity usage for the extraction, conveyance, distribution, and treatment of water supplied to the county. In general, the water energy intensity or amount of electricity needed per gallon of water used is more than twice as high in Southern California than the rest of the state due to fewer local fresh water resources. Electricity use is correlated with GHG emissions through the fuels used at power plants to generate electricity. Although California is aiming to increase the percentage of renewable resources for electricity generation, increasing electricity demands also require procurement of additional renewable resources.

This strategy focuses on the reduction of potable water consumption, which will not only reduce electricity demands for water extraction, conveyance, and delivery, but also treatment. This strategy would also result in overall water conservation, allowing for more water to be available, which supports the well-being of community and public health, especially during seasons of drought.

W-1.1: Increase Water Efficiency in New Residential Development

MEASURE SUMMARY

Require installation of water-efficient appliances and plumbing fixtures in all new residential construction pursuant to Tier 1 of the California Green Building Standards Code (CALGreen) by 2020

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	87
2050 Anticipated GHG Reduction	303

DESCRIPTION

This measure is a requirement. CALGreen is California's first green building code, and the first state-mandated green building code in the United States. The purpose of CALGreen is to improve public health, safety, and general welfare through sustainable building construction and design. This green building code regulates construction of residential and non-residential buildings, including planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality.

All new construction in the county is subject to the mandatory requirements of CALGreen; however, the code also includes voluntary "tiers" that reach beyond the current State code requirements for new construction. To achieve CALGreen Tier 1, buildings must comply with certain green building measures including standards for green flooring, thermal insulation, recycled content, solar reflectance, and water-efficient appliances and plumbing fixtures, among others. This measure would accelerate the adoption of CALGreen Tier 1 measures for residential construction, as it pertains to water-efficient kitchen faucets and ENERGY STAR-rated dishwashers and clothes washers. This measure will be enforced through the County's current permitting process.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

W-1.1: Increase Water Efficiency in New Residential Development (continued)

RELATED LEGISLATION

CalGreen Tier 1 - Voluntary

CO-BENEFITS

- Water Savings
- Community Health
- Energy Savings
- Cost Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes)	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
Collaborate with the San Diego County Water Authority (SDCWA) and local water districts to provide education and outreach to homeowners on water conservation tips, financial programs, and incentives	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
Water-efficient appliances and plumbing fixtures installed in all new residential development pursuant to Tier 1 of the California Green Building Standards Code (CALGreen)	2020

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

W-1.2: Reduce Outdoor Water Use

MEASURE SUMMARY

Require a 40% reduction from 2014 outdoor water use budgets for landscaping in new and existing residential and non-residential development by 2020

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	17,535
2050 Anticipated GHG Reduction	19,087

DESCRIPTION

This measure is a requirement. In response to prolonged drought conditions in California, the State and local jurisdictions have enacted water efficiency standards for new and existing landscaping, which include limiting the use of turf. In 2016, the County amended its Water Conservation in Landscaping Ordinance (Landscaping Ordinance) to be consistent with the State's 2015 update to the California Water Commission-approved Model Water Efficient Landscape Ordinance (MWELO). Based on the County's 2016 Landscape Ordinance, this measure would effectively require residential and non-residential landscapes to use 18% and 4% less potable water than currently required by the State, respectively.

The State is considering updating the MWELO, which would go into effect by January 2020. If the State does not update the MWELO to require a 40% reduction from 2014 outdoor water use budgets for landscaping, then the County's Landscaping Ordinance would be amended by 2020 to achieve this standard. This measure applies only to potable water use in outdoor landscaping and not all outdoor applications. This measure would be enforced through the County's current permitting process.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

W-1.2: Reduce Outdoor Water Use (continued)

RELATED LEGISLATION

State Model Water Efficient Landscape Ordinance (MWELO)

CO-BENEFITS

- Water Savings
- Community Health
- Public Health
- Water Quality
- Energy Savings
- Cost Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend Title 8 of the San Diego County Code of Regulatory Ordinances (Water Conservation in Landscaping)	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
Collaborate with the San Diego County Water Authority (SDCWA) and local water districts to provide education and outreach to property owners on drought-tolerant landscaping and use of drought-tolerant plant species	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
40% reduction in 2014 outdoor water use budgets for landscaping in new and existing residential and non-residential development	2020

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

W-1.3: Reduce Potable Water Consumption at County Facilities

MEASURE SUMMARY

Reduce potable water consumption at County facilities by 15% below 2014 levels by 2020 and 20% below 2014 levels by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	244
2030 Anticipated GHG Reduction	276
2050 Anticipated GHG Reduction	325

DESCRIPTION

This measure is a County initiative. The County's Strategic Energy Plan (SEP) ensures that sustainability practices are integrated into the County's operations and minimize utility consumption and costs. This measure applies to County-owned and leased facilities.

The County will implement the SEP's Water Use Strategy to reduce potable water consumption at County facilities. The County has established strategies to achieve the targets, which include implementing water efficient improvements and retrofit projects, replacing landscaping with artificial turf, mulch or xeriscape, where feasible, and transitioning to satellite based "smart" irrigation controllers at County facilities. Through implementation of these strategies, the County will reduce potable water consumption.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

W-1.3: Reduce Potable Water Consumption at County Facilities (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Water Savings
- Water Quality
- Public Health
- Cost Savings
- Energy Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Implement the County's Strategic Energy Plan (SEP)	DGS	2015-2030	Medium

SUPPORTING EFFORTS	TIME FRAME
Work with the Padre Dam Municipal Water District on the Advanced Water Purification Program	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
15% reduction in potable water consumption at County facilities below 2014 levels	2020
20% reduction in potable water consumption at County facilities below 2014 levels	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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Strategy W-2: Increase Rainwater Use

The county receives an average of 10 inches of rain per year. Capturing rainwater is an efficient source of water in that it requires no conveyance or delivery mechanisms other than an on-site collection system. Using captured rainwater can offset consumption of water from more typical sources with far higher water energy intensities. As mentioned previously, water consumption in the county results in indirect electricity usage for the conveyance, distribution, and treatment of water supplied.

This strategy focuses on the reduction of water consumption through the capture, storage, and re-use of rainwater, particularly for landscaping end uses. As with Strategy W-1 (Reduce Potable Water Consumption), this strategy will result in overall water conservation, allowing for more water to be available locally, regionally, and statewide. Availability of water is tied to the well-being of community and public health, especially during seasons of drought.

W-2.1: Increase Rain Barrel Installations

MEASURE SUMMARY

Capture, store, and re-use rainwater in existing and new developments by installing 1,200 rain barrels by 2020 and an additional 2,000 rain barrels by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	10
2030 Anticipated GHG Reduction	23
2050 Anticipated GHG Reduction	23

DESCRIPTION

This measure is an incentive. One inch of rain falling on a 1,000 square foot roof can harvest 600 gallons of rainwater. By installing rain barrel systems, homeowners can save money and conserve water on outdoor irrigation, while preserving the County's potable water supply. Collecting, storing, and re-using rainwater for landscaping minimizes the amount of polluted runoff that could flow into storm drains and contaminate local waterways.

This measure aims to increase rainwater capture and reduce potable water use for irrigation in existing and new development. The County will continue to work with the County Water Authority and Metropolitan Water District of Southern California (MWD) to provide rebate opportunities at County-sponsored outreach events and rain barrel sales events. This measure assumes captured rainwater will only be used for outdoor landscaping applications.

Based on the County's historical rain barrel participation data, it is projected that 1,200 rain barrels will be installed in the unincorporated county by 2020 and an additional 2,000 rain barrels will be installed by 2030.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

W-2.1: Increase Rain Barrel Installations (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Water Savings
- Water Quality
- Energy Savings
- Cost Savings

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Increase participation in the Metropolitan Water District of Southern California's rain barrel rebate program through outreach, education, and marketing	DPW	Ongoing	Low

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
1,200 rain barrels installed	2020
2,000 rain barrels installed	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

Agriculture and Conservation

The County greatly values the contribution of agriculture to the county's economy and livelihood. Accordingly, the high level of agricultural activity also presents a significant emissions reduction opportunity. Emissions from the Agriculture and Conservation category, including emissions from livestock, fertilizer use, and equipment, accounted for five percent of the County's total emissions in 2014. The CAP's Agriculture and Conservation measures will contribute:

- 0.2% of GHG reductions estimated for 2020;
- one percent of GHG reductions needed to meet the 2030 target (Figure 3.7); and
- 0.8% of GHG reductions estimated for 2050.

The agriculture and conservation-related measures proposed under this strategy aim to reduce emissions from agricultural equipment and increase carbon sequestration. In addition to quantifiable measures, the CAP also includes supporting efforts related to carbon farming and availability of locally grown and raised food. The County recognizes the importance of promoting sustainable agricultural practices and innovative carbon sequestration solutions to achieve continued GHG reductions.

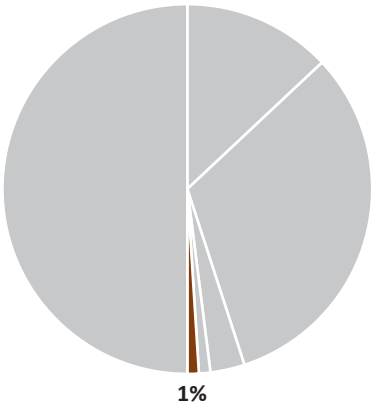

Figure 3.7 Agriculture and Conservation Reductions for 2030

The Agriculture and Conservation category is composed of two strategies and four measures with supporting efforts:

Strategy A-1: Support Conversion of Agricultural Equipment to Alternative Fuels

- Measure A-1.1 – Convert Farm Equipment to Electric
- Measure A-1.2 – Convert Stationary Irrigation Pumps to Electric

Strategy A-2: Increase Carbon Sequestration

- Measure A-2.1 – Increase Residential Tree Planting
- Measure A-2.2 – Increase County Tree Planting

Strategy A-1: Support Conversion of Agricultural Equipment to Alternative Fuels

Emissions from agricultural equipment account for 52% of all agricultural emissions. Most agricultural equipment, such as tractors and pumps, are petroleum-diesel-powered. This strategy supports the conversion of such equipment to fuels with lower carbon emission rates, such as renewable diesel and compressed natural gas. Reduction of petroleum-diesel use will also reduce petroleum-diesel-related exhaust, improving air quality and community and public health. Switching to electric equipment would also reduce noise levels from agricultural equipment.

A-1.1: Convert Farm Equipment to Electric

MEASURE SUMMARY

Convert farm equipment used in the unincorporated county from gas- and petroleum-diesel-powered to electric to achieve an eight percent conversion rate by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	6,737
2050 Anticipated GHG Reduction	6,679

DESCRIPTION

This measure is an incentive. Farm equipment accounted for approximately 52% of GHG emissions from the agriculture sector in 2014. This measure will reduce emissions from off-road farm equipment by replacing diesel-powered farm equipment with electric. Electric equipment also allows for quiet operation that can reduce noise pollution. Available electric equipment includes tractors, mulchers, and chainsaws. The San Diego County Air Pollution Control District's (SDAPCD's) financial incentives may also be used for cleaner engine replacements, which could help improve fuel efficiency.

Based on historical participation in SDAPCD's farm equipment incentive program, it is projected that eight percent of the farm equipment used in the unincorporated county can be replaced by 2030.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

A-1.1: Convert Farm Equipment to Electric (continued)

RELATED LEGISLATION

Federal

Ozone air quality standards for mobile agricultural equipment

CO-BENEFITS

- Air Quality
- Noise Reduction
- Public Health
- Cost Savings
- Community Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Convert farm equipment to electric through San Diego County Air Pollution Control District financial incentives	SDAPCD	2030	Medium

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
Eight percent of farm equipment converted to electric	2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

A-1.2: Convert Stationary Irrigation Pumps to Electric

MEASURE SUMMARY

Convert stationary petroleum-diesel or gas-powered irrigation pumps to electric to achieve four electric stationary irrigation pumps by 2020 and an additional 40 electric stationary irrigation pumps by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	295
2030 Anticipated GHG Reduction	3,249
2050 Anticipated GHG Reduction	3,249

DESCRIPTION

This measure is an incentive. The San Diego County Air Pollution Control District (SDAPCD) will provide financial incentives to convert stationary diesel- or gas-powered irrigation pumps to electric; these may be connected to the grid or use off-grid alternative/renewable energy sources, such as solar. Electric pumps allow for quiet operation that can reduce noise pollution and are up to 2.5 times more efficient than diesel pumps.

Based on funding from SDAPCD's farm equipment incentive program, it is projected that four stationary diesel- or gas-powered irrigation pumps can be converted to electric by 2020 and an additional 40 irrigation pumps can be converted by 2030.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

A-1.2: Convert Stationary Irrigation Pumps to Electric (continued)

RELATED LEGISLATION

State
California emission standards
Regulates diesel engines

Federal
Ozone air quality standards for mobile agricultural equipment

CO-BENEFITS

- Air Quality
- Noise Reduction
- Public Health
- Cost Savings
- Community Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Convert stationary petroleum-diesel or gas-powered irrigation pumps to electric through San Diego County Air Pollution Control District financial incentives	SDAPCD	2015-2030	Medium

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
Four stationary irrigation pumps converted to electric	2020
40 stationary irrigation pumps converted to electric	2021-2030

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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Strategy A-2: Increase Carbon Sequestration

As part of the natural carbon cycle, photosynthesis in plants takes carbon dioxide (CO_2) in the atmosphere and converts it into oxygen and carbon-based plant matter, storing the carbon captured from the atmosphere. Trees are significant sources of carbon storage and sequestration due to their size and longevity, and provide essential habitat for local fauna. This strategy focuses on the preservation and expansion of tree growth in the county to increase the amount of carbon sequestered in pursuit of offsetting CO_2 emissions generated by other sources, to the extent feasible.

Increased carbon sequestration and new tree plantings will also improve air quality through the capture of air pollutants, water quality through reduced erosion, biological resources by providing additional habitat and improved water quality, and community and public health through the provision of shade and positive impacts on overall wellbeing.

A-2.1: Increase Residential Tree Planting

MEASURE SUMMARY

Require trees be planted for every new residential dwelling unit constructed in the unincorporated county at a rate of two trees per new dwelling unit

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	1,244
2050 Anticipated GHG Reduction	2,243

DESCRIPTION

This measure is a requirement. Trees use photosynthesis to convert carbon dioxide into nutrients that they use for food and growth. Trees are unique in their ability to store large amounts of carbon in their wood and they continue to add carbon as they grow. This measure will increase the net number of trees in the county on private lands outside the publically-maintained right-of-way.

The ordinance will include water conservation strategies to minimize water use, which could include planting drought-tolerant and native trees and prioritizing tree plantings in areas served by recycled water and greywater infrastructure.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

A-2.1: Increase Residential Tree Planting (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Biological Resources
- Carbon Sequestration
- Community Health
- Water Quality
- Public Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend Title 8 of the San Diego County Code of Regulatory Ordinances (Water Conservation in Landscaping Ordinance)	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
35,146 trees planted through new residential development	2030
28,202 trees planted through new residential development	2031-2050

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

A-2.2: Increase County Tree Planting

MEASURE SUMMARY

Prepare and implement a tree planting program for the unincorporated county to plant a minimum of 3,500 trees annually starting in 2017

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	496
2030 Anticipated GHG Reduction	1,735
2050 Anticipated GHG Reduction	4,213

DESCRIPTION

This measure is a County initiative. Trees use photosynthesis to convert carbon dioxide into nutrients that they use for food and growth. Trees are unique in their ability to store large amounts of carbon in their wood and they continue to add carbon as they grow. This measure will increase the net number of trees in the county on public lands.

The County will also conduct a Tree Canopy Assessment by 2025 to analyze the canopy coverage in the unincorporated county.

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

A-2.2: Increase County Tree Planting (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Biological Resources
- Carbon Sequestration
- Community Health
- Water Quality
- Public Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Plant 3,500 trees annually	DPR	2017-2030	Medium
Implement Tree Planting Program	DPR & PDS	2020	Low
Conduct a Tree Canopy Assessment	DPR & PDS	2025	Low

SUPPORTING EFFORTS	TIME FRAME
N/A	N/A

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
49,000 trees planted in the unincorporated county	2017-2030
70,000 trees planted in the unincorporated county	2031-2050

NOTE: This GHG reduction measure is composed of the following components: 1) measure summary, 2) GHG emissions reductions, 3) description, 4) actions, and 5) outcomes.

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