LIVE WELL SAN DIEGO

August 2017

County of San Diego

CLIMATE ACTION PLAN

Draft

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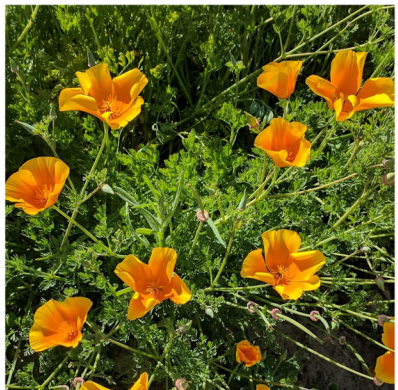











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County of San Diego

Climate Action Plan

Draft

PREPARED BY:

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AECOM

August 2017

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COUNTY ACCOMPLISHMENTS | TAKING ACTION

1 Adopted the *Live Well San Diego* vision that includes more than 290 formal partner organizations and seeks to help communities build better health, live safely, and thrive.

2 Incentivized 290 property owners to use resource efficient construction materials, water conservation, and energy efficiency in new and remodeled buildings through the County's *Green Building Incentive Program,* since July 2010.



3 Permitted thirteen large-scale renewable energy projects with the capacity to generate 477 megawatts (MW) of electricity and save 238,000 metric tons of carbon dioxide equivalent ($MTCO_2e$).



4 Permitted 26,456 residential and commercial solar and wind permits since July 2012, generating 197 MW of renewable energy and eliminating approximately 99,000 $MTCO_2e$.



5 Issued 25,881 solar, plumbing, heating, ventilation, and air conditioning, and electrical upgrade permits online since July 2012, which reduces vehicle miles traveled and associated greenhouse gas emissions.



6 Installed 37 electric vehicle charging ports at 10 County facilities.



7 Transitioned 1,364 of County fleet vehicles and equipment to hybrid and alternative fuels.



8 Rebuilt the Alpine Library and the Imperial Beach Library to be the County's first zero net energy buildings, generating as much energy as the buildings consume.



9 Received *Leadership in Energy and Environmental Design* certification for 75 County facilities, equating to 1.36 million square feet of built resource efficiency.



10 Conserved 1,762 acres of agricultural land through the *Purchase of Agricultural Conservation Easement* Program.



11 Conserved and manage 47,500 acres of biological open space lands, the majority of which are associated with the County's *Multiple Species Conservation Program*.



12 Developed the *Tiered Wind Ordinance*, which simplifies the permit process to encourage small-scale wind energy systems.



13 Published the *Water Efficient Landscape Design Manual* to help people create attractive landscapes while using water efficiently and mitigating wildfire risk.



14 Facilitated agricultural pursuits, including wineries, microbreweries, agricultural tourism, cheese-making, beekeeping, and onsite retail horticultural sales through the development of the *Agriculture Promotion Program*.



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EXECUTIVE SUMMARY

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Throughout California, communities are addressing weather changes and its potential impacts by developing Climate Action Plans (CAPs). Each jurisdiction has unique conditions and characteristics to consider as they develop implementation strategies to address these conditions. The County of San Diego's (County's) CAP is a multi-objective plan that balances environmental, economic, and community interests; implements the County's General Plan; and aligns with multiple County initiatives. It identifies strategies and measures to meet the State's 2020 and 2030 greenhouse gas (GHG) reductions targets, and to demonstrate progress towards the 2050 GHG reduction goal. The County is committed to strategies that will help meet the targets based on its rural character and the opportunities this brings. The County's CAP will continuously evolve and be regularly monitored and refined.

County Context

The unincorporated portion of the county is located in the southwestern corner of California and encompasses approximately 2.3 million acres or 3,570 square miles with a 2014 population of 454,599. Large federal, state, and regional parklands covering much of the eastern portion of the county. Tribal lands comprise 5.7 percent of the land area. Only 35% or about 807,000 acres of the unincorporated county is privately owned.

The San Diego region is recognized as one of the most biologically important areas in the U.S., and one of the most biologically diverse areas in the world. Unincorporated lands are comprised of natural features that include lagoons, foothills, mountain ranges, and deserts. This diversity is part of the San Diego region's unique natural heritage and a legacy to be protected for future generations.

The county is consistently ranked among the top ten agricultural counties in California. Agriculture is the fifth largest component of the county's economy and provides an array of economic, environmental, and social benefits that contribute to the quality of life in the region.

The unincorporated area is home to 24 distinct communities that vary from suburban densities and scales in locations adjacent to neighboring incorporated cities, to lower density rural communities surrounded by hillsides, deserts, and agricultural lands. The most developed communities are located along the unincorporated territory's westernmost boundaries and have access to water, sewer, roads, schools, and other public facilities. The development nature of these communities is directly related to how emissions are generated in the county and what opportunities exist for GHG reductions.

Background

State Initiatives

California has taken a prominent role within the U.S. in taking action to reduce GHG emissions and improve preparedness related to sea-level rise, wildfires, water supply, and other risks. Starting more than a decade ago with a 2005 Executive Order that was later codified in the Global Warming Solutions Acts of 2006 (Assembly Bill 32) and 2016 (Senate Bill 32), the State has continued to expand its climate-related legislative framework with complementary legislation that addresses specific sectors such as land use, transportation, energy and water, as well as environmental justice and public health issues. California's commitment to reduce GHG emissions and improve resiliency extends responsibilities to local governments, opens new markets, and establishes climate planning as a core consideration for business practices.

Regional Programs and Coordination

The San Diego region has been actively engaged in climate planning at the regional and local level. The San



The CAP will help achieve the Live Well San Diego vision for a region that is building better health, living safely and thriving.

Diego Association of Governments (SANDAG), as the region's transportation planning agency and conduit for federal and State transportation funding, plays a key role in planning and implementing mobility facilities and services, and achieving vehicle miles traveled-related GHG emissions.

The County, together with other local governments and public agencies, is working collaboratively with local nonprofits, universities, and businesses to prepare plans and implement programs that complement State efforts.

The General Plan - Planning for Growth, Conservation, and Sustainability

The County's General Plan celebrates the region's spectacular natural setting, and balances goals for growth, conservation, and sustainability. The General Plan is based on guiding principles designed to support a reasonable share of projected regional population growth, protect the county's natural resources, and maintain the character of its communities. The General Plan, updated in 2011, shifts growth capacity from the eastern backcountry areas to western communities. It includes specific goals and policies aimed at reducing GHG emissions including growing in a compact and efficient manner, using energy more efficiently, harnessing renewable energy to power buildings, improving waste recycling, and improving access to sustainable transportation. Because of the county's size and complexity, the General Plan calls for community plans to address the critical issues that are unique to each community, and to provide focus for desired land use, densities, and character.

The CAP updates and implements General Plan Goal COS-20 and Policy COS-20.1; and mitigation measures CC-1.2, CC-1.7, and CC-1.8 of the General Plan Update Final Program Environmental Impact Report.

County Sustainability Plans and Programs

Over the last decade, the County has taken several steps to address sustainability and reductions in GHG emissions. In addition to the General Plan, notable efforts include the:

- *Live Well San Diego* Vision;
- County Food Systems Initiative;
- Purchase of Agriculture Conservation Easement Program;
- Multiple Species Conservation Program;
- Strategic Plan to Reduce Waste; and
- County Strategic Energy Plan.

This CAP aligns with and builds upon these past efforts through complementary implementation-focused actions.



Residents and visitors enjoy open spaces and recreational opportunities with over 55 miles of county trails, including the Helix Flume Trail (pictured).

The key components of the CAP are briefly summarized in the following sections.

Chapter 1 Introduction

Chapter 1 introduces the CAP and provides background information. The CAP's strategies and measures are designed to reduce GHG emissions and achieve multiple secondary benefits. Measures are feasible, effective, balanced, and intended to be implemented through a flexible management framework. The CAP will serve as a "Qualified GHG Reduction Plan" for purposes of tiering under the California Environmental Quality Act.

Chapter 2 GHG Inventory, Projections, and Reduction Targets

This chapter summarizes the County's 2014 GHG baseline emissions inventory, future emission projections, and future reduction targets. The inventory is an estimate of GHG emissions that can be readily estimated, monitored, and reduced by County measures, and are within local jurisdictional control. The inventory importantly identifies and quantifies major sources of emissions, provides the baseline to project future emission trends and develop reduction targets, informs the development of strategies and measures, and tracks and reports progress. Major findings of the baseline GHG emissions inventory include:

- 3,211,505 metric tons of carbon dioxide equivalent were emitted by activities in the unincorporated county in 2014;
- The largest source of emissions was the On-Road Transportation sector (i.e., gasoline and diesel consumption in on-road transportation), which accounted for 45% of the inventory;
- The Electricity sector accounted for approximately 24% of the inventory; and

- Without any future actions (i.e., "business-as-usual" conditions), GHG emissions are expected to increase.

Greenhouse gas emissions reduction targets for the CAP were established consistent with the most recent guidance provided by the California Air Resources Board (CARB) to achieve:

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

The top five emitting sectors in 2014 were:

1. On-Road Transportation (45%)
2. Electricity (24%)
3. Solid Waste (11%)
4. Natural Gas (9%)
5. Agriculture (5%)

Chapter 3 GHG Reduction Strategies and Measures

Local GHG emissions reduction strategies and measures were identified to help the County achieve its 2020 and 2030 GHG reduction targets, and 2050 goal. Strategies describe the overall approach and expected results to be achieved, and are linked to General Plan policies as detailed in Appendix F. Measures are specific, locally based programs and actions that the County will carry out to achieve its climate action strategies. Supporting efforts are additional actions that help reduce GHGs, that are not currently quantifiable due to data limitations or lack of an available method to measure results. However, over time, implementation of supporting efforts may result in efficiencies that could be captured in future inventory updates.

The CAP contains 11 strategies, 29 GHG reduction measures, and supporting efforts organized under five GHG emissions categories:

1. Built Environment and Transportation;
2. Energy;
3. Solid Waste;
4. Water and Wastewater; and
5. Agriculture and Conservation.

Given that the largest source of emissions in the unincorporated county is the On-Road Transportation sector, the CAP proposes several measures under the "Built Environment and Transportation" category to reduce the number and length of vehicle trips. These measures include a proposal to update 10 community plans by 2030 to facilitate village development, and another to acquire open space lands, together supporting implementation of General Plan recommendations for targeted growth and conservation. Despite the magnitude of these and other measures, the County has limited options under its control for implementing transportation-based strategies. Consequently, the measures rely heavily on energy-based solutions to meet the County's commitments.

The top five measures in the CAP that will achieve the most local GHG emissions reductions include:

1. Install Solar Photovoltaics in Existing Homes;
2. Increase Renewable Electricity;
3. Increase Solid Waste Diversion;
4. Improve Building Energy Efficiency in New

Development; and

5. Reduce Outdoor Water Use.

Climate Action Plan measures have implementation costs that affect businesses, residents, government operations, and the public-at-large. In an effort to provide a broader range of options, the CAP includes an innovative strategy to allow direct investments in local projects to offset carbon emissions. This adaptive management tool provides an option for flexible and cost-effective solutions that would be instituted through a Local Carbon Offset Program. While the primary purpose of CAP measures is to reduce GHG emissions, attention was also given to the degree to which measures will also result in secondary, or indirect environmental, economic, or community "co-benefits."

Chapter 4 Climate Change Vulnerability, Resiliency, and Adaptation

As part of the CAP process, a climate change vulnerability assessment was conducted for the unincorporated county (Appendix D). This assessment identified a range of direct and indirect impacts that could have adverse effects, including:

1. Increases in average temperatures, the frequency of heat waves, and extreme heat events;
2. Exacerbation of the urban heat island effect;
3. Decreased water supply security associated with reduced snow pack in the Sierra Nevada and Rocky Mountain Ranges;
4. Increased wildfire risk due to increased heat and potentially drier conditions; and
5. Increased risk of flash flood events related to more intense precipitation.



Renewable energy generation can help offset emissions from electricity use.

Potential adaptation strategies are included to address these effects. Many of the strategies are based on the County and other partnering agencies addressing climate-related risks as part of existing planning processes. The County can also develop programs to incentivize individuals to take action.

Chapter 5 Implementation and Monitoring

This chapter outlines how the County will implement the CAP and monitor progress towards achieving the 2020 and 2030 GHG emission reduction targets and long-term 2050 goal. Measures must be regularly assessed and continuously monitored to ensure:

1. All measures include clearly defined steps necessary for implementation;
2. Individual measures are contributing to the overall GHG reduction target;
3. The CAP is on track to achieve its overall GHG reduction targets; and
4. Beneficial community outcomes are attained.

> "Local governments play an important role in achieving the State's long-term GHG goals for 2030 and 2050. Action and collaboration are needed at all levels to complement and support State level actions." (*The 2017 Climate Change Scoping Plan Update*)

The County will monitor CAP progress through:

- Preparation of an annual monitoring report assessing the CAP's implementation;
- Updates to the GHG emissions inventory every two years; and
- Preparation of CAP updates every five years based on findings from the annual monitoring reports and inventory updates.

Chapter 6 Public Outreach and Engagement

Public outreach and stakeholder engagement are essential components in the preparation and successful implementation of a CAP. In recognition of the importance of public participation in the planning process, the County developed a Public Outreach and Engagement Plan to establish specific opportunities for the public to collaborate with County staff on key strategies to achieve GHG reduction targets and reduce the effects of a changing climate in their local communities.

The County team participated in over 100 different community events across the county to raise awareness about the CAP process and gather input from members of the public unable to attend formal meetings or who were unaware of the project.

To engage the various County departments, an "Internal Working Group" was convened to bring resources together during development of the CAP. In February 2017, the San Diego County Board of Supervisors transitioned this Internal Working Group into a Sustainability Task Force to implement energy efficiency, renewable energy, and sustainability plans, policies, and programs. Upon adoption of the CAP, the Sustainability Task Force will oversee implementation of the CAP.

Successful implementation will require long-term commitment and ongoing collaboration with private and public sector partners, as well as the community-at-large.

Through diligent monitoring, flexible management, and periodic updates, the CAP will remain an effective tool to reduce emissions and help implement the County's vision for the future.



1

INTRODUCTION

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Planning For a Changing Climate

The County of San Diego (County) Climate Action Plan (CAP) sets forth strategies and measures to reduce greenhouse gas (GHG) emissions in the county's unincorporated areas and from County operations. The CAP is structured to meet State mandates to further the General Plan's vision and guiding principles, and is informed by community input. The CAP is tailored to address the opportunities and constraints that arise from the county's expansive and diverse landscape with its open spaces, rural heritage, and unique communities. The CAP builds upon the General Plan and other efforts to reduce GHGs; promote health, sustainability, and environmental stewardship; and reinforce the vitality, local economy, and individual character of existing communities. In addition to specific subject-oriented measures, it proposes a direct investment strategy that would allow GHG emissions to be offset through funding other projects; providing an adaptive management tool; and serving as an incentive for flexible and cost-effective solutions.

While the CAP uses the best information, research, and techniques available today, technologies and markets are constantly changing. Strategies identified in the CAP may change based on new technologies that are brought to market or become feasible. New federal and State laws may be passed that achieve broad-based emission reductions and shift local governments' emission reduction targets or change the effectiveness of reduction measures. For these reasons, the CAP must be closely monitored, adjusted, and managed to ensure it is thoughtfully, cost-effectively, and successfully implemented over the long term.

State Initiatives

California has a prominent role within the U.S. in taking action to reduce GHG emissions and improve preparedness related to sea-level rise, wildfires, water supply, and other risks. Starting more than a decade ago with a 2005 Executive Order (EO), that was later codified in the Global Warming Solutions Acts of 2006 (Assembly Bill [AB] 32) and 2016 (Senate Bill [SB] 32), the State has continued to expand its legislative framework to address these issues. This framework includes additional complementary legislation that addresses specific sectors such as land use, transportation, energy, and water, as well as environmental justice and public health issues. California's commitment to reduce GHG emissions and improve climate resiliency extends responsibilities to local governments, opens new markets, and establishes climate planning as a core consideration for business practices. Key actions, summarized in this section, provide important policy direction and context for the CAP.

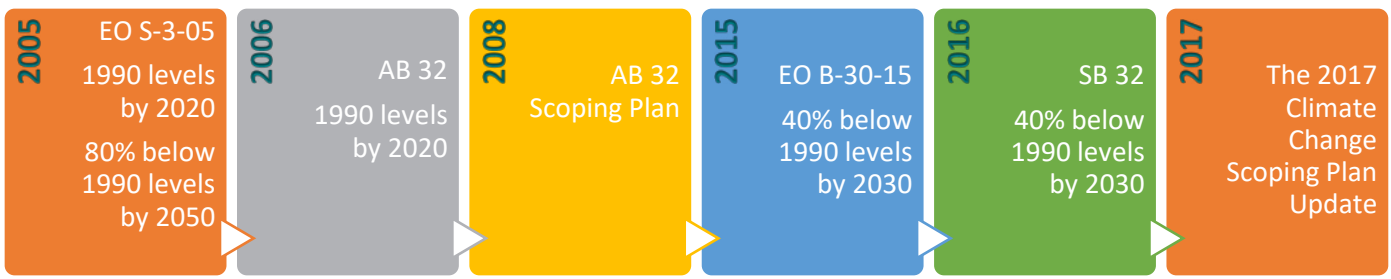


Figure 1.1 State GHG Reduction Framework

Figure 1.1 illustrates the major legislative, administrative, and regulatory actions that form the framework for reducing GHG emissions in California. This consists of EOs, legislative bills, and agency planning efforts. The figure demonstrates two separate, but related, phases that have established statewide 2020 and 2030 GHG reductions targets. In each phase, EOs set targets that were later fixed in law – AB 32 set the 2020 target and SB 32 set the 2030 target. Once the targets were adopted as law, the State created the long-term roadmap for achieving each target, also known as the Scoping Plan. Over the next year, the *The 2017 Climate Change Scoping Plan Update* (Scoping Plan Update) is expected to be finalized. The Scoping Plan Update contains the strategies and measures that will be necessary to meet the 2030 statewide GHG reduction target. Achieving 2020 and 2030 targets is necessary to ensure that the long-term 2050 goal can be met.

Table 1.1 focuses on additional State legislation and regulations that have the most direct influence on the emissions sectors included in the CAP.

The California Air Resources Board recognizes local governments as "essential partners" in achieving California's goals to reduce GHG emissions. Local governments can

Table 1.1 Relevant State Legislation

Regulation/Legislation	Title/Issue	Description
SB 375	Sustainable Communities and Climate Protection Act of 2008	Requires regional targets for GHG reductions from passenger vehicles through better land use and transportation planning and a Sustainable Communities Strategy (SCS)
SB 350	Clean Energy and Population Reduction Act	Sets 2030 targets for increasing the state renewable energy mix to 50%, doubling of energy efficiency in existing buildings, and a modernized electric grid
EO S-01-07	Low Carbon Fuel Standard	Establishes a target to reduce the amount of carbon in transportation fuels by 10% by 2020
Advanced Clean Cars Program	Passenger Vehicle GHG Emissions	Sets emission standards for vehicles and targets for deployment of zero-emissions vehicles
SB 1000	Incorporation of Environmental Justice into Local Plans	Requires cities and counties to include a section on environmental justice when they update their general plans
SB 535 and AB 1550	Prioritizing Investments in Disadvantaged and Low-Income Communities	Requires the identification of disadvantaged and low-income communities throughout the state and sets minimum targets for overall investments from the State Cap-and-Trade Program
SB 379	Climate Adaptation and Resiliency Planning	Requires cities and counties to incorporate climate adaptation and resiliency into core local planning documents and processes
SB 97	California Environmental Quality Act (CEQA) of 2007 Amendments	Amendments for the feasible reduction of GHG emissions or the effects of emissions along with additional guidance

implement climate strategies to address local conditions and issues, and engage residents more effectively than the State. Local governments have broad jurisdiction and, in some cases, unique authorities, through community-scale planning and permitting processes, discretionary actions, local codes and ordinances, outreach and education efforts, and government operations. The California Air Resources Board contends that local government efforts are critical to support the State's efforts to reduce emissions and can ultimately deliver additional emissions reductions beyond what State policy can, along with local economic benefits (CARB 2017).

Local actions cannot be addressed by one agency or community, but require active and ongoing partnerships among residents, businesses, the County, and other agencies and organizations in the region. By planning and engaging in more sustainable practices, communities will be able to respond to future risks and changes. The CAP serves as another resource to support long-term sustainability efforts.

Regional Programs and Coordination

The San Diego region has been actively engaged in climate planning at the regional and local level. The San Diego Association of Governments (SANDAG), as the region's transportation planning agency and conduit for federal and State transportation funding, plays a key role in planning and implementing mobility facilities and services, and achieving GHG emissions reductions associated with passenger vehicle use. The County, together with other local governments and public agencies, is working collaboratively with local nonprofits, universities, and businesses to prepare plans and implement programs that complement State efforts. More than half of the jurisdictions in the region have prepared or are developing a CAP. In addition, the San Diego County Regional Airport Authority, the San Diego County Water Authority, and the San Diego Unified Port District have adopted CAPs for their operations. Local universities have also made commitments to reduce their emissions.

This CAP is applicable to emissions generated within the unincorporated areas that are under the County's land use jurisdiction, and from County government operations. A summary of regional efforts to promote emissions reductions and support broader community health goals is provided in Table 1.2. Some of these programs are referenced within the local reduction measures presented in Chapter 3. Through collaboration and coordination, others may provide the funding or knowledge-sharing framework that will support future long-range emissions reduction efforts within the unincorporated county.

Table 1.2 - Relevant Regional Effort

Agency	Program	Description
SANDAG	San Diego Forward: The Regional Plan	The Plan integrates the Regional Transportation Plan and SCS, and the Regional Comprehensive Plan into one document to chart the region's future growth and transportation investments through 2050. Pursuant to SB 375, the SCS demonstrates how the region will reduce GHG emissions generated through vehicle miles traveled (VMT) (from passenger vehicles and light-duty trucks). The Regional Plan reduces GHG emissions by 15% per capita, by 2020, and 21% per capita, by 2035, compared with a 2005 baseline.
SANDAG in partnership with San Diego Gas & Electric (SDG&E)	Energy Roadmap Program and Local Government Partnerships	SANDAG provides local governments with "Energy Roadmaps" (management plans) that identify ways to save energy in municipal operations and the community, resulting in cost savings and environmental benefits. The Energy Roadmap Program is a collaboration between SANDAG and SDG&E. The County, along with the City of San Diego, and Chula Vista have individual local government partnership agreements with SDG&E and are not participants in the Roadmap Program.
SANDAG	Regional Plug-In Electric Vehicle (PEV) Readiness Plan	The plan is part of a statewide effort to prepare local governments for the deployment of PEV. The San Diego PEV Readiness Plan identifies barriers to the deployment of PEV charging infrastructure and includes recommendations and resources for public agencies, property owners, consumers, and other stakeholders to overcome those barriers.
San Diego Regional Climate Collaborative	Manages projects supporting leadership on climate action planning to ensure a vibrant economy, healthy environment and resilient communities in the San Diego region	The San Diego Regional Climate Collaborative is a network for public agencies to share expertise, leverage resources, and advance comprehensive solutions to facilitate climate change planning. The Collaborative partners with academia, non-profits, and businesses to support regional leadership and develop effective strategies. The County is a founding member and participates on the steering committee.
Center for Sustainable Energy (CSE)	San Diego Regional Energy Partnership (SDREP)	CSE manages projects on behalf of the SDREP, which includes the County, City of San Diego, City of Chula Vista, SDAG, Port of San Diego and SDG&E. SDREP has created several resources for local stakeholders looking to advance the local market for energy efficient buildings.
The San Diego Foundation	The Foundation is a charitable nonprofit organization that supports climate planning efforts.	Since 2006, the San Diego Foundation has invested more than $3.5 million in the creation of cross-sector partnerships, assessment of regional vulnerabilities, and priorities to address climate change, and increased public understanding of local impacts of climate change with policy makers, scientific experts, businesses, and other community leaders.

County Context

The unincorporated portion of the county is located in the southwestern corner of California and encompasses approximately 2.3 million acres, or 3,570 square miles with a 2014 population of 454,599. A majority of the unincorporated county's land, in excess of 90%, is open space or undeveloped. This includes several large federal, state, and regional parklands that encompass much of the eastern portion of the county. Tribal lands comprise 5.7 percent of the land area. Only 35%, or about 807,000 acres of the unincorporated county, is privately owned. According to the General Plan, approximately 5.6 percent of the unincorporated county, or 128,369 acres, was private undeveloped land with potential for future development in Village, Semi-Rural, Commercial, or Industrial areas.

The San Diego region is recognized as one of the most biologically important areas in the U.S., and one of the most biologically diverse areas in the world.



The San Diego region is one of the most biodiverse regions in the world.

The species diversity found in the region can be attributed to the wide variety of vegetation and habitats associated with the region's range of microclimates, topography, soils, and other natural features. Unincorporated lands are comprised of natural features that include lagoons, foothills, mountain ranges, and deserts. The San Diego region supports over 400 sensitive plants and animals, ranging in sensitivity from common to critically endangered. This diversity is part of the San Diego region's unique natural heritage and a legacy to be protected for future generations.

The county is consistently ranked among the top ten agricultural counties in California. It has the fourth highest number of farms of any county in the country and third highest number of farms of any county in California. Agriculture is the fifth largest component of the county's economy. Agriculture provides an array of economic, environmental, and social benefits that contribute to the quality of life in the region.

The county is home to 24 distinct communities that vary in land use and density. In general, the communities include a core of local-serving commercial uses, services, schools, and public facilities surrounded by residential neighborhoods. They vary from semi-suburban residential neighborhoods that transition in scale and density from adjoining incorporated cities, to low-density rural communities surrounded by hillsides, deserts, and agricultural lands. The most developed communities are located along the unincorporated territory's westernmost boundaries and include the community plan areas of Spring Valley, Sweetwater, Valle de Oro, Lakeside, San Dieguito, portions of North County Metro, and Fallbrook. These areas have access to water, sewer, roads, schools, and other public facilities.

Planning for Growth, Conservation, and Sustainability

The General Plan celebrates the region's spectacular natural setting, and balances goals for growth, conservation, and sustainability. The General Plan is based on guiding principles designed to support a reasonable share of projected regional population growth, protect the county's natural resources, and maintain the character of its communities.

The General Plan, updated in 2011, shifts growth capacity from the eastern backcountry areas to western communities. It encourages growth to occur in villages with "compact land development patterns to minimize intrusion into agricultural lands and open spaces; reduce travel distances to local services and businesses, while also inducing community association, activity, and walking."

This approach "reflects the County's commitment to a sustainable growth model that facilitates efficient development near infrastructure and services, while respecting sensitive natural resources and protecting of existing community character." A major component to guiding the physical planning of the county is the Community Development Model that "directs the highest intensities and greatest mix of uses to Village areas, while directing lower-intensity uses, such as estate-style residential lots and agricultural operations, to Semi-Rural areas. The Semi-Rural category may effectively serve as an edge to the Village, as well as a transition to the lowest-density category, Rural Lands, which represents large open space areas where only limited development may occur."

The General Plan also includes specific goals and policies aimed at reducing GHG emissions by growing in a compact and efficient manner, using energy more efficiently, harnessing renewable energy to power buildings, improving waste recycling, and improving access to sustainable transportation. Both individually and collectively, these measures are intended to reduce the cost of living, maintain or improve overall quality of life, and help the county's unincorporated communities thrive.

Because of the county's size and diversity, the General Plan calls for community plans to address the critical issues that are unique to each community, and to provide more precise guidance regarding desired land use, densities, and character than the broader policies of the General Plan. When updating community plans, "communities are encouraged to delineate areas within their plans that will assist with the future planning of developments, infrastructure, facilities, and regulations. An Urban Limit Line and/or Village Boundary may be defined in the Community Plan as a community-specific growth boundary that identifies an area to which development should be directed. These boundaries may also serve as the basis for community specific goals and policies." Community plan updates guide village development, identify walking and biking system improvements, address public facilities needs, and provide design guidelines and tailored policies that will help realize the CAP's GHG emission reduction targets.

County Sustainability Plans and Programs

Over the last decade, the County has taken several steps to address sustainability and reductions in GHG emissions. Since 2005, the County has been involved in various efforts to quantify GHG emissions sources and formulate reduction strategies on both a county and larger regional level. This CAP builds upon these past efforts by creating a GHG inventory for 2014 and forecasting emissions for 2020, 2030, and 2050.

Other notable County efforts include:

***Live Well San Diego*:** *Live Well San Diego* is the County's vision for a region that is Building Better Health, Living Safely, and Thriving. It aligns the efforts of individuals, organizations, and government to help all 3.3 million county residents live well and bring about positive change for the greater good.

Food System Initiative: The *Live Well San Diego* Food System Initiative works to support a robust and resilient local food system that builds healthy communities, supports the economy, and enhances the environment. In collaboration with many organizations in the region, including businesses and non-profits, the initiative focuses on four priority areas:

- Working with stakeholders to create a biennial *State of the Food System in San Diego County Report* to identify and track comprehensive metrics for progress in improving the food system countywide.
- Collaborate with local food system stakeholders to increase food donation to help address food insecurity countywide and reduce food waste.
- Provide technical assistance for small-to-medium sized markets to offer access to affordable, healthful, local, and culturally desirable food items in underserved neighborhoods.
- Implement Eat Well Practices to expand healthy and sustainable food and beverage options offered by the County.

Comprehensive Renewable Energy Plan (CREP) Phase One Report: The Phase One Report presents options to increase renewable energy use. The report provides a thorough assessment of best management practices and considers the costs and benefits of implementation, and overall return on investment. The County of San Diego Board of Supervisors (Board) has identified seven Phase One recommendations for the County to consider as part of a long-range strategic renewable energy plan. CREP recommendations do not directly translate into emissions reductions, but were used to develop the CAP's renewable and energy efficiency measures.

General Plan: The General Plan balances population growth and development with infrastructure needs and resource protection. The General Plan is based on smart growth and land planning principles that will reduce vehicle miles traveled (VMT) and conserve open space lands.

Purchase of Agriculture Conservation Easement (PACE) Program: 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 removes 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.

Multiple Species Conservation Program (MSCP): The MSCP Program is designed to establish connected preserve systems that ensure the long-term survival of sensitive plant and animal species and protects the native vegetation found throughout the county. Plans created under this program are both a federal Habitat Conservation Plan and a State Natural Community Conservation Planning program plan. The General Plan acknowledges that the MSCP is "an important program that significantly contributes to the County's ability to realize its watershed protection and climate change goals."

Strategic Plan to Reduce Waste: The Strategic Plan to Reduce Waste 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.

Strategic Energy Plan (SEP): The SEP ensures that sustainability practices are integrated into the County's operations and minimize utility (water and energy) consumption and costs. This strategy applies to County-owned and leased facilities and vehicles. The SEP includes a community component to encourage residents to reduce energy and water consumption through outreach and education.



GHG Emission Categories, Strategies, and Measures

The CAP is organized to address five primary GHG emission categories:

Built Environment and Transportation: Focus growth in the county villages by updating community plans for the community planning areas that include villages. Built environment measures also include acquiring and preserving land for conservation and agricultural purposes to reduce GHG emissions from land that can otherwise be developed. Transportation measures aim to reduce emissions through context sensitive, multi-modal planning in each community to: reduce vehicle trips through "Complete Streets" improvements that encourage pedestrian and cycling trips, foster the use of electric and alternative fuel vehicles, manage existing infrastructure more efficiently, and reduce the number and length of trips through improved access and connectivity.

Energy: Achieve greater building energy efficiencies for new construction and rehabilitation of existing structures, transition away from tank-based natural gas-fueled water heaters, require energy audits, and increase renewable energy use.

Solid Waste: Implement the County's Strategic Plan to Reduce Waste by expansion of County waste reduction, recycling, and composting programs; and increase participation from residents and businesses to reduce, reuse, and recycle waste.

Water and Wastewater: Conserve water to become more resilient to drought conditions, and improve water quality. This includes installation of water-efficient appliances and plumbing fixtures in all new residential construction, reduction in outdoor water use for landscaping in new and existing residential and non-residential development, rain barrel installations, and participating in regional efforts to explore options for potable water.

Agriculture and Conservation: Reduce emissions from agricultural equipment, increase carbon sequestration, and promote sustainable and locally grown food.

For each category, strategies, measures, and supporting efforts are identified.

Strategies describe the overall approach and expected results to be achieved, and are linked to General Plan policies.

Measures are specific programs and actions that the County would carry out to achieve its climate action strategies. Measures are achievable, enforceable, and measurable. For each measure:

- Estimated GHG reductions resulting from each measure are quantified and are key to assessing the success of the CAP.
- Community/public co-benefits show the complementary impact that would result from each measure and are not required to meet the County's reduction targets and goal.
- Cost estimates, as available, are included to provide a low, medium or high estimate of costs.
- The time frame is provided to identify if the measure is anticipated to be implemented in the near-, medium- or long-term.

Supporting efforts are additional actions that help reduce GHGs, that are not currently quantifiable due to data limitations or lack of an available method to measure results. However, over time, implementation of supporting efforts is expected to result in efficiencies that will be captured in future inventory updates.

The CAP also includes an innovative "direct investment" measure that can benefit all emission categories. Direct investments in local projects, such as weatherization, can cost-effectively offset carbon emissions within the county while also reducing residents' heating and cooling expenses. The San Diego County Air Pollution Control District will establish a Local Carbon Offset Program by 2020 through which the County can register and retire the carbon credits generated by local projects. This measure offers a flexible, responsive (adaptive management) tool to meet targets, maximize cost-effectiveness, and achieve co-benefits. It fosters creative and effective solutions to GHG reductions, and has the potential to achieve greater GHG results per dollar spent. Property and business owners can also take advantage of the registry by retiring or selling mitigation credits on the market.

Environmental, Economic, and Community Co-Benefits

The CAP helps implement the General Plan's broad vision as well as its GHG-specific policies. While the measures included in the CAP are focused on reducing GHG emissions, each will also result in secondary, or additional, co-benefits such as improved air quality, green economy job growth, increased mobility options, and reduced household transportation costs. These benefits help achieve broader goals for a healthy environment, social equity and well-being, and a strong economy that are aligned with County's initiatives as described in this chapter.

Environmental benefits include improved air quality, water supplies, and biological resources. Public health benefits are typically closely related to environmental co-benefits, and certain adaptation strategies, such as preparedness for extreme heat events. Consequently, the CAP supports implementation of the County's *Live Well San Diego* vision for "Building Better Health, Living Safely and Thriving."

Many of the measures will also have direct and indirect economic benefits. Measures that focus on improving energy- and water-use efficiency in new and existing buildings have the potential to lower operation costs for residents and businesses. Reduced energy and water costs may lead residents and businesses to invest and spend more in the local economy. Progressive building design and construction practices, including achieving energy efficiency in buildings and installing renewable energy systems, will reduce the demand for imported energy. Additionally, local clean energy projects such as residential solar installations, utility scale solar and wind farms, and electric vehicle charging stations result in more local investment, more local jobs, and more money circulating and recirculating in the local economy.

Similarly, reinvestment in local buildings, public facilities, parks and infrastructure will provide new opportunities for skilled trades and professional services, while creating complete communities. The methods and tools include public/private partnerships and hands-on training, and offer a potential opportunity for the business and labor community to work together to build a green economy.

The CAP also supports developing transportation alternatives to help reduce GHG emissions including: fostering transportation demand management strategies to make more efficient use of existing infrastructure; improving public transit options, including new park and

ride facilities that connect to the larger regional transit network; and increasing access to major employment centers. Walking and biking in village and community centers will reduce VMT while creating opportunities for healthy lifestyles.

As centers and villages grow with more residents, jobs, and services, they will increasingly be focal points for achieving sustainability, economic development, and public health goals. Providing options that allow people to drive less, save money, and have more free time are important co-benefits that are expected to result from many of the strategies and measures in the CAP. While some solutions have broad applicability across the region, most must be tailored to local county conditions. For example, transit-based commuting strategies may achieve success in more urban parts of the region, but their effectiveness may be limited in the unincorporated county.

The direct benefits and co-benefits that are expected to result from implementing the CAP will have positive impacts on social equity and environmental justice. There are broad and different definitions of these two terms, but they can be generally defined as living in a healthy environment and having access to economic, social, and cultural opportunities.

The CAP is in alignment with several key pieces of State social equity and environmental justice legislation that are described in Table 1.1: SB 1000, SB 535, and AB 1550. Senate Bill 1000, requires local governments to identify "disadvantaged communities" within their boundaries and establish policies to improve conditions in them as part of future general plan updates. The State has defined these communities based on characteristics such as their exposure to pollution, population characteristics including low education and income levels, and access to transportation among others.

The other two pieces of legislation, SB 535 and AB 1550, require the State to prioritize a portion of funding to reduce GHGs from its statewide Greenhouse Gas Reduction Fund for investment in the defined disadvantaged and low-income communities. The unincorporated county includes some identified low-income communities that could qualify for priority funding, as outlined in Chapter 5. The County could apply for this funding in order to help fund the implementation of measures in these particular communities that face these challenges.

An underlying premise of the County General Plan is to conserve natural resources and develop lands and infrastructure for a more sustainable future. Planning and developing a sustainable future depends on a healthy environment, strong economy, and the social well-being of the county's residents. Throughout the General Plan are goals and policies that contribute to the following:

Environment: conserving air, water, land, soils, minerals, natural habitat, energy, and aesthetic resources; while protecting life and property from the risks of wildfires, flooding, and other hazards;

Economy: creating good jobs, income, and financial resources; and

Equity and Social Well-Being: providing library, park and recreation facilities, along with programs that contribute to improvements in education, income, health, safety, arts, and cultural attainment for all.

CAP-Related Actions

The following actions are being taken in connection with the CAP. Details on the proposed actions can be found in Chapter 1 of the Draft Supplemental Environmental Impact Report (SEIR). In addition to analyzing the impacts from CAP strategies and measures, the SEIR also evaluates proposed amendments to General Plan Goal COS-20 and Policy COS-20.1, and Mitigation Measures CC-1.2, CC-1.7, and CC-1.8 of the 2011 General Plan Update (2011 GPU) Program Environmental Impact Report. These changes would require a General Plan Amendment to the 2011 General Plan Update. In addition, the County has prepared *Guidelines for Determining Significance for Climate Change* including the adoption of a GHG Threshold, and Report Format and Content Requirements.

CAP Implementation and Monitoring

Meeting State targets represents a challenge that will require significant County investments, long-term commitment, and the widespread participation of the region's residents and business owners. Implementation will be dependent on the County adopting future implementation ordinances, policies, and programs. A cost/benefit analysis is being prepared, which will inform decisions on individual implementation measures. Meeting reduction targets will require Board actions and continued collaboration among all levels of government, as well as the private, non-profit, and educational sectors. The CAP is a long-term program and is expected to be modified, or adaptively managed, as specific actions and circumstances change over time. For example, improvements in energy technology and efficiency, transportation technology and fuels, building standards, consumer behavior, implementation costs, and future federal and State regulations may warrant revisiting measures. Advancements in battery technology may increase market demand for electric vehicles and rooftop solar systems, and deployment of autonomous vehicles may alter how people travel and spend their transportation dollars. From a governance perspective, if the State continues to adopt legislation and regulations that lead to broad-based reduced GHG emissions, local responsibilities for targeted measures may shift.

CEQA Streamlining

The California Environmental Quality Act is a statute that requires local agencies to identify significant environmental impacts of their actions and avoid or mitigate those impacts, if feasible. In 2007, California's lawmakers enacted SB 97, which expressly recognizes the need to analyze GHG emissions as part of the CEQA process. SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to address GHG emissions as an environmental effect. In response to the mandate of SB 97, the CEQA Guidelines (Section 15183.5) establish standards for the contents and approval process of plans to reduce GHGs.

This CAP has been prepared consistent with those standards. Pursuant to CEQA Guidelines Section 15183.5-qualified plan, the CAP affords development applicants the opportunity to use CEQA streamlining tools for analysis of GHG emissions and related impacts for projects that are consistent with the CAP. Details on how projects can achieve consistency with the CAP are provided in a separate *Guidelines for Determining Significance for Climate Change* document.

Looking Ahead

The CAP is a detailed plan for the County to achieve its long-term goals for reducing GHG emissions. It includes strategies, measures, and supporting efforts that achieve Triple Bottom Line objectives to benefit the environment, economy, and community. The CAP demonstrates how the County will achieve GHG emissions targets for 2020 and 2030, and demonstrate progress to 2050. The CAP also includes measures to improve the county's resilience to potential environmental risks and hazards over the long term. Successful implementation will require long-term commitment and ongoing collaboration with private and public sector partners, as well as the community-at-large. Through diligent monitoring, flexible management, and periodic updates, the CAP will remain an effective tool to reduce emissions and help implement the County's vision for the future.

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2

GREENHOUSE GAS EMISSIONS INVENTORY, PROJECTIONS, AND REDUCTION TARGETS

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Introduction

This chapter summarizes the County of San Diego's (County's) accounting of greenhouse gas (GHG) emissions from activities within the unincorporated communities of the county and from County operations. The inventory excludes emissions from activities on lands under tribal and military jurisdiction, as the County does not have land use authority over these lands. The inventory also excludes emissions from activities within incorporated cities, with the exception of County operations that occur in those areas. It includes a discussion of the primary sources and annual levels of GHG emissions for 2014 (i.e., baseline inventory); describes likely trends if emissions are not reduced for 2020, 2030, and 2050 (i.e., projections); and sets a path forward to reduce emissions for 2020, 2030, and 2050 (i.e., near-term targets and long-term goal).

2014 Inventory Year

- It aligns with the California Air Resources Board's (CARB's) most recent inventory year.
- It represents the year with the most complete annual data set for the county.

Assembly Bill (AB) 32, Senate Bill (SB) 32, and Executive Orders (EOs) B-30-15 and S-3-05 use 1990 as a benchmark year to identify statewide GHG reduction targets. Data for the county's 1990 emissions level are not available; therefore, the County prepared an inventory and established proportional targets for 2014. As explained further in this section, the CAP targets using a 2014 benchmark are consistent with the targets using a 1990 benchmark established by AB 32, SB 32, and EOs B-30-15 and S-3-05.

Purpose of a Greenhouse Gas Emissions Inventory

One of the main objectives of this Climate Action Plan (CAP) is to identify and reduce local contributions to GHG emissions. This chapter is intended to serve as a foundation for the strategies and measures that the County will implement to reduce GHG emissions consistent with statewide 2020 and 2030 targets. Measuring GHG emissions is a critical first step in developing the CAP for several reasons. First, the GHG inventory identifies and quantifies major sources of GHG emissions associated with the activities and choices currently made by residents, businesses, and public institutions. Second, the inventory provides the baseline that is used to project emissions trends and develop accurate near-term reduction targets and a long-term goal consistent with State objectives. Finally, the 2014 inventory allows the County to develop, evaluate, and implement strategies and measures to achieve its near- term GHG reduction targets and long-term goal.

After the CAP is adopted, the County will prepare GHG emissions inventories every two years that will be compared to the 2014 inventory and be used to track progress in reducing emissions as CAP measures are implemented. The inventory establishes 2014 as the base year from which the County determines GHG reduction targets.

GHG Emissions Inventory versus Carbon Footprint

Two common terms used when discussing GHG emissions quantification are "carbon footprint" and "GHG emission inventories." While related, these concepts are not synonymous.

A GHG emissions inventory is an estimate of a defined set of gases (e.g., carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O]) that contribute to climate change. The emissions inventory prepared for this CAP is focused on emissions that are generated due to activities within the unincorporated county and from County operations, from a defined set of sources (e.g., on-road transportation, electricity use, and waste). These include emissions that can be readily estimated, monitored, and reduced by County measures that support the efforts of residents and businesses, and are within local jurisdictional control. However, this means that the CAP GHG emissions inventory does not address everyone's contribution to GHG emissions on a global scale (e.g., purchasing imported goods, global goods exports or air travel to and from the county).

> The emissions inventory is limited to GHGs that are generated by activities in the county from a defined set of sources (e.g., on-road transportation, electricity use, and waste) that can be readily monitored and reduced through County actions.

Unlike a GHG emissions inventory, a carbon footprint is not limited to a defined geography or to a set of activities and sources that the County can influence. A carbon footprint includes all GHG emissions that result from everyone's daily choices or the activities of a business or organization, such as the energy required to grow and ship food; the energy required for various forms of travel or goods movement far beyond the county's borders (e.g., trains, planes, and ships); or the embodied energy to manufacture, market, and dispose of the products used by county residents. Thus, not all the GHG emissions generated directly or indirectly are included in the county's GHG emissions inventory. As detailed in Appendix A and Appendix B, the inventory was prepared using established protocols and models for community and local government operation emissions and includes sources over which the County would have "significant influence." This reporting framework emphasizes policy relevance, highlighting a set of emission sources and activities that the County has the greatest opportunity to address.

This CAP includes strategies and measures that will help achieve the County's objectives to reduce GHG emissions as documented in the emissions inventory.

Residents, businesses, and organizations make choices daily that produce GHG emissions that may be beyond the influence of the County and the CAP. This does not mean that residents or businesses should feel limited to only those measures identified in this CAP, which are focused primarily on the county's inventoried emissions. Rather, members of the community can still make climate-friendly choices, such as buying locally-grown foods and locally-manufactured products that reduce electricity and energy use, to further reduce the local carbon footprint and further contribute to helping reverse climate change trends on a global scale.

Baseline Inventory

The first step in the County's climate action planning process is to understand the sources and amounts of GHG emissions generated from activities within the county unincorporated areas and County operations. The International Council for Local Environmental Initiatives (ICLEI) *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions* and ICLEI *Local Government Operations Protocol* were used to create the 2014 inventory. Using these methodologies, generally all emissions from activities within the unincorporated county are included as well as all emissions relating to County operations.

The County's 2014 inventory of GHG emissions is broken down into the following nine sectors, shown in decreasing level of contribution (i.e., one contributes the most and nine contributes the least). The inclusion of County operations in this inventory is explained further in this section. Table 2.1 and Figure 2.1 show emission levels for each sector and their relative contribution.

The County's 2014 GHG Emissions Inventory has nine sectors:

1. On-Road Transportation
2. Electricity
3. Solid Waste
4. Natural Gas
5. Agriculture
6. Water
7. Off-Road Transportation
8. Wastewater
9. Propane

On-Road Transportation: On-road transportation emissions associated with gasoline and diesel driving on county roadways, in addition to emissions from County fleet operations and employee commutes.

Electricity: Emissions from electricity generation due to electricity consumption in residential, commercial, industrial, and agricultural facilities. This includes electricity consumption at local government facilities such as County buildings, streetlights, and stormwater pumps.

Solid Waste: Waste emissions associated with landfills in the county (including County-operated closed landfills) and waste generated in the unincorporated county. Solid waste generated by local government facilities is also included in this sector.

Natural Gas: Emissions associated with natural gas consumption in residential, commercial, industrial, and agricultural facilities. This includes natural gas use at County facilities.

Agriculture: Agricultural emissions associated with livestock, fertilizer use, soil management, and agricultural equipment. No agricultural emissions are attributed to local government operations.

Water: Water-related emissions associated with energy and fuel used to convey, extract, treat, and distribute water in the unincorporated areas for domestic, irrigation, and industrial purposes. This includes water use at County facilities for employee use and irrigation.

Off-Road Transportation: Emissions associated with gasoline and diesel consumption by off-road vehicles and equipment, including emissions from construction equipment and recreational vehicles. This includes all

off-road vehicles operated by the County.

Wastewater: Wastewater treatment emissions associated with the energy consumed and emissions produced to process domestic sewage and industrial wastewater either at on-site septic systems or centralized wastewater treatment plants. This includes wastewater generation at County facilities located outside the unincorporated county.

Propane: Emissions associated with residential propane usage, such as outdoor hearths, barbecues, and in homes that do not have access to natural gas pipelines. Due to lack of usage data, no propane emissions are attributed to non-residential operations. Local government operations did not report propane usage at facilities beyond emergency generators.

The 2014 GHG inventory includes both emissions attributable to the community activities within the unincorporated county, as well as County-operated facilities and operations inside and outside of the unincorporated areas of the county. Many of the County's facilities and operations are located in incorporated cities, though these activities would not occur without the existence of the unincorporated community and are therefore attributed to the County. The intent of this inventory is to provide a complete picture of emissions from activities under the County's influence and jurisdictional control, both at a community level and from local government operations. Further details on the methodology for the inventory can be found in Appendix A and Appendix B.

On-road transportation emissions include all vehicles traveling within the unincorporated county, partial emissions from vehicles traveling to and from the unincorporated county, and County fleet and employee commute vehicles traveling both within and outside of the unincorporated county. For example, the on-road transportation inventory includes emissions from a

County employee commuting from the City of El Cajon to a County office in the City of San Diego. Likewise, the inventory includes emissions associated with the operation of County facilities outside the unincorporated county, such as electricity and natural gas use at a County office located in the City of San Diego (e.g., the County Administration Center and the County Operations Center, both which are located within the City of San Diego). County operations located within the unincorporated county are already assumed to be included in community-level data, such as within aggregated natural gas use data from San Diego Gas and Electric for the unincorporated county, because the data gathered for the unincorporated county included all consumption data for the county and did not exclude County operations. Emissions from air traffic are not included in this inventory as air traffic is under federal jurisdiction.

Units of Measurement

An important aspect of GHGs is the unit of measurement used to inventory and estimate emissions. The largest contributor to climate change is CO_2 and it is also the most recognized GHG; however, there are two other primary GHGs that must be addressed to meet State-mandated reduction targets: CH_4 and N_2O. To simplify discussion of these emissions collectively, climate action plans use a measurement known as carbon dioxide equivalent (CO_2e).

The CO_2e measurement translates each GHG into a comparable metric to CO_2. This entails multiplying non-CO_2 gases by their global warming potential (GWP). According to the Intergovernmental Panel on Climate Change (IPCC), CH_4 and N_2O are 25 and 298 times more potent, respectively, than CO_2 in their ability to trap heat in the atmosphere (IPCC 2007). A metric ton of CO_2e

(MTCO2e) is the standard measurement of the amount of GHG emissions produced and released into the atmosphere.

The CO2e measurement translates each GHG to CO_2 by weighting it by its relative GWP. Converting these gases into CO2e (i.e., emissions of one metric ton of CH_4 are equivalent to emissions of 25 metric tons of CO_2 and emissions of 1 metric ton of N_2O are equivalent to emissions of 298 metric tons of CO_2) allows consideration of all the GHGs in comparable terms and makes it easier to communicate how various sources and types of GHG emissions contribute to climate change.

Additional details related to the specific emission sectors, data sources, assumptions, and methodology can be found in Appendix A and Appendix B. Table 2.1 and Figure 2.1 show the breakdown of the County's GHG emissions in 2014, including County operational emissions, which have been incorporated into the nine GHG sectors.

The county's top five emitting sectors in 2014 are:

1. On-Road Transportation (45%)
2. Electricity (24%)
3. Solid Waste (11%)
4. Natural Gas (9%)
5. Agriculture (5%)

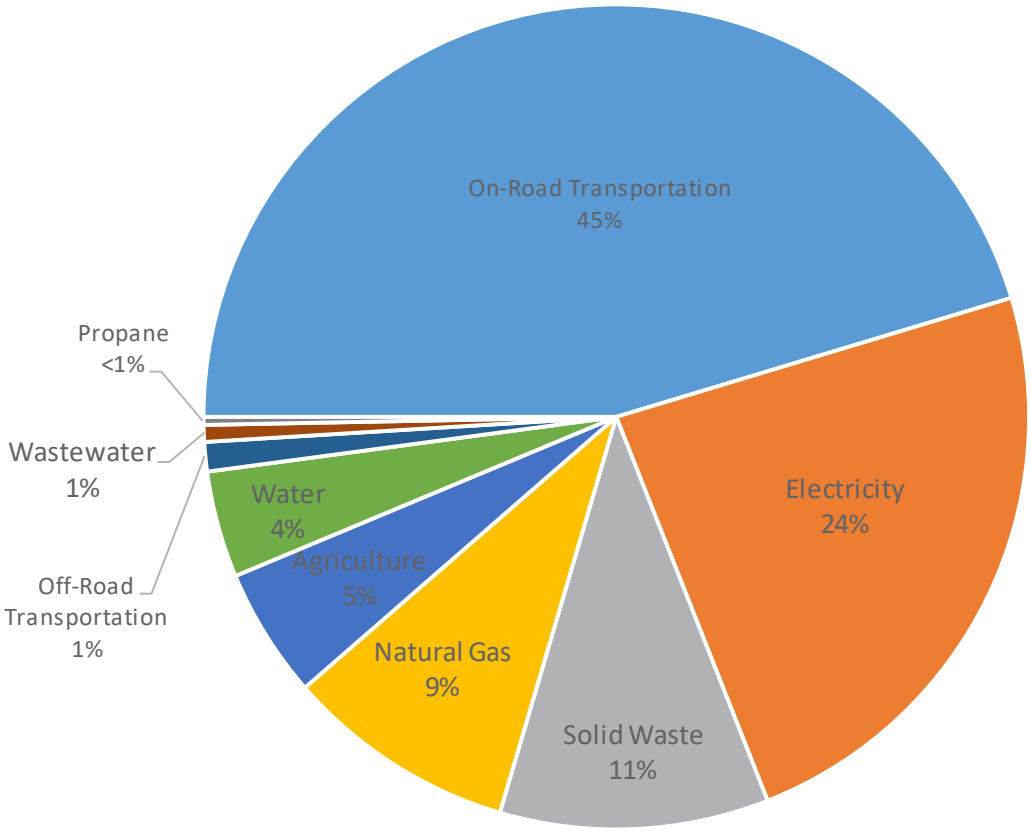


Figure 2.1 County GHG Emissions by Sector (2014)
Note: Data may not add to totals due to rounding.

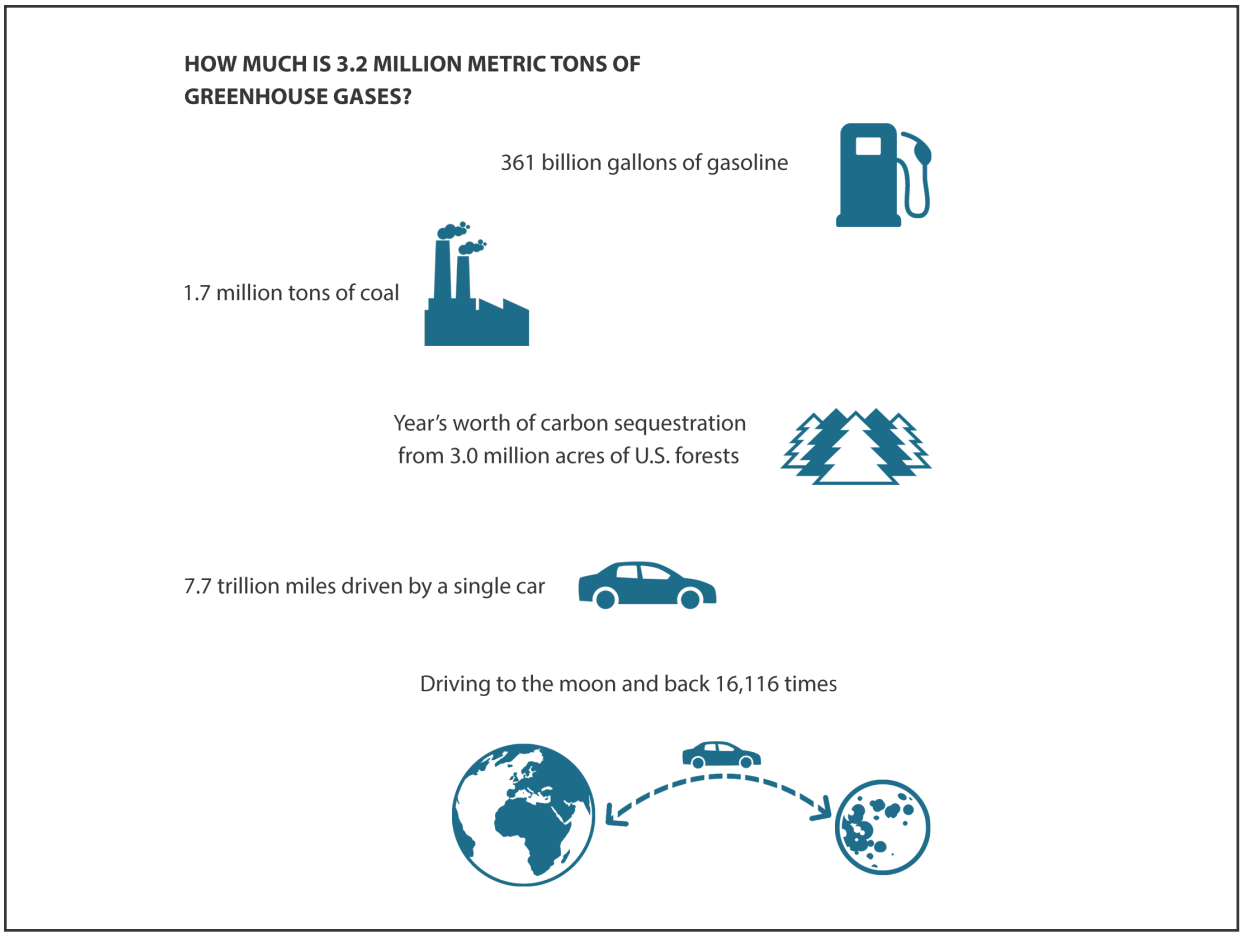


Table 2.1 County GHG Emissions by Sector (2014)

Emissions Sector	Emissions ($MTCO_2e$)	Percent (%)
On-Road Transportation	1,456,060	45
Electricity	760,638	24
Solid Waste	338,107	11
Natural Gas	290,712	9
Agriculture	163,696	5
Water	134,269	4
Off-Road Transportation	36,927	1
Wastewater	21,183	1
Propane	9,914	<1
Total	**3,211,505**	**100**

Notes: Columns may not add to totals due to rounding

$MTCO_2e$ = metric tons of carbon dioxide equivalents

Source: Data modeled by Ascent Environmental in 2017.

Emissions Projections

Greenhouse gas projections estimate future emission levels based on a continuation of current trends in activity, population growth, and accounting for known legislative actions that could affect emissions in the future. Projections provide insight into the scale of reductions needed to achieve the near-term reduction targets and long-term goal.

The projections, referred to as the "business-as-usual" (BAU) projections, assume no additional GHG reduction efforts and regulations. The BAU projections also assume that population, housing, employment, and transportation activity will grow over time, consistent with the San Diego Association of Governments (SANDAG) projections that are based on the General Plan growth forecasts. Growth from General Plan Amendments (GPAs) adopted since adoption of the 2011 General Plan Update are also included in the projections. Finally, the BAU projections do not account for GHG emissions reductions associated with implementation of the CAP or future emission reductions programs initiated by the federal and State government because the BAU projections are intended to demonstrate the expected growth in GHG emissions if no action is taken by the State or at the local level.

Details on how the projections were developed and the indicators used to estimate each emission sector, as well as data sources can be found in Appendix A and Appendix B.

The BAU GHG emissions projections in the CAP assume a continued increase in population, housing units, employment, and transportation activity. Projections are based on SANDAG's projections and the General Plan.

Demographic Trends

Greenhouse gas emission projections were estimated for 2020, 2030, and 2050 using County-specific demographic and transportation activity projections from SANDAG. Table 2.2 shows demographic data used to develop GHG projections.

Table 2.2 Demographic Trends in the Unincorporated County

	2014	2020	2030	2050
Population	454,599	493,604	551,712	600,560
Employment	85,742	95,671	104,157	129,788
Number of Households	163,354	174,741	192,925	213,486

Notes: Population shown is for the unincorporated County excluding tribal and military lands. Detailed demographics data are provided in Appendix A.

Legislative Reductions

The county's GHG projections account for several legislative actions that will reduce future emissions, without any additional local government action called for in this CAP (Table 2.3). The applied legislative reductions include:

- Improved vehicle efficiency standards;
- Increased electric vehicle mode share;
- Adopted improvements to the State's Building Energy Efficiency Standards; and
- Adopted statewide targets to reach 50% renewable mix in statewide electricity generation by 2030.

Most currently adopted legislation does not address emissions reductions beyond 2030. For this reason, projected emissions are expected to decrease through 2020 and 2030, but increase by 2050 as population grows while legislative reductions remain static based on their status.

Table 2.3 County GHG Inventory and Projections with and without Legislative Reductions (MTC)e2O

Emissions Sector	2014	2020	2030	2050
Total Without Any Legislative Reductions (BAU Total)	**3,211,505**	**3,407,168**	**3,723,596**	**4,220,560**
Emissions with Legislative Reductions				
On-Road Transportation	1,456,060	1,306,679	1,081,223	1,116,114
Electricity	760,638	690,144	661,266	723,503
Solid Waste	338,107	358,651	389,610	411,298
Natural Gas	290,712	302,017	323,008	353,041
Agriculture	163,696	161,376	160,136	158,760
Water	134,269	125,616	128,104	139,446
Off-Road Transportation	36,927	40,815	43,938	49,733
Wastewater	21,183	23,001	25,708	27,985
Propane	9,914	10,372	11,055	11,629
Total with Legislative Reductions	3,211,505	3,018,671	2,824,049	2,991,507
Legislative Reductions	0	-388,498	-899,547	-1,229,053

Notes: Columns may not add to totals due to rounding.
BAU = Business-as-Usual
GHG=greenhouse gases
MTCO2e = metric tons of carbon dioxide equivalents
Source: Data modeled by Ascent Environmental in 2017.

A detailed description and analysis of how specific legislation has influenced the county's GHG emissions projections can be found in Appendix A and Appendix B. Table 2.3 and Figure 2.2 show the breakdown of the county's projected GHG emissions including the effect of legislative reductions.

The table and figure also include a comparison to total emissions that would occur without any legislative reductions.

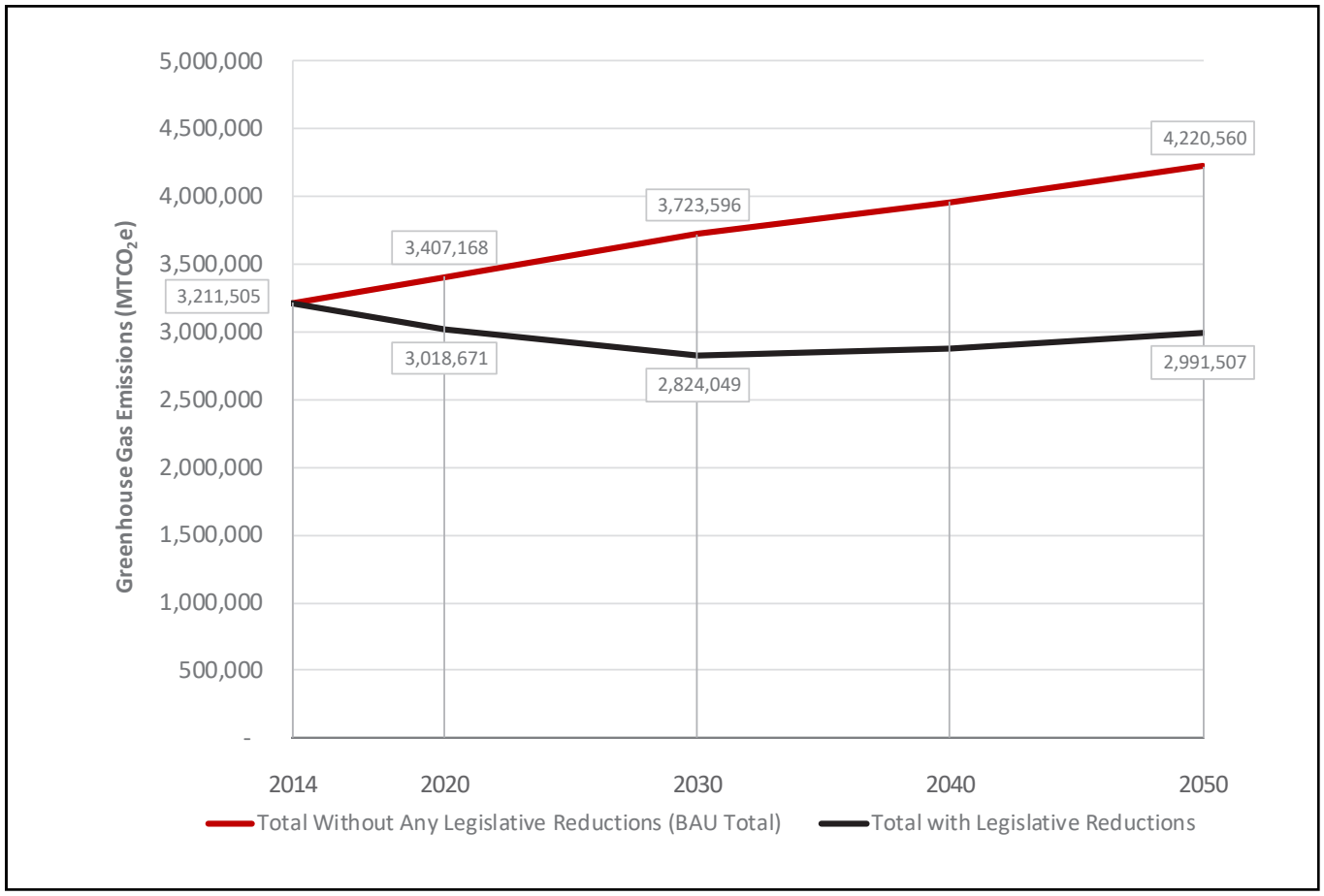


Figure 2.2 County GHG Inventory and Projections with and without Legislative Reductions

Reduction Targets

This CAP primarily focuses on reducing emissions by 2020 and 2030, consistent with legislatively-adopted State targets. While it is important to create a long-term emissions reduction goal, it would be speculative to demonstrate achievement of a goal for 2050 with the information known today. This is primarily due to uncertainty around future technological advances and future changes in federal and State law beyond 2030. California's GHG reduction targets have been legislatively adopted for 2020 and 2030, while the 2050 goal is expressed in an EO. In addition, *The 2017 Climate Change Scoping Plan Update* (Scoping Plan Update) is focused on meeting the 2030 reduction target, as directed in SB 32 and AB 32. Therefore, the County's CAP aligns with the State in setting a 2030 target. As climate change science and policy continues to evolve, the County will be able to apply new reductions toward meeting the long-term 2050 GHG emissions reduction goal in future CAP updates, as outlined in Chapter 5. As directed in AB 32, SB 32, and EOs B-30-15 and S-3-05, the State aims to reduce annual statewide GHG emissions to:

- 1990 levels by 2020;
- 40% below 1990 levels by 2030; and
- 80% below 1990 levels by 2050.

The Scoping Plan Update indicates that reducing the State's emissions to 80% below 1990 levels by 2050 would be consistent with IPCC's analysis of the global emissions trajectory needed to stabilize atmospheric concentrations at 350 parts per million or less, to "reduce the likelihood of catastrophic climate change" (CARB 2014).

Some communities do not have baseline inventories dating back to 1990 and therefore must extrapolate from more recent inventories. To determine an overall GHG reduction target at the local level that would be consistent with the State's overall targets, CARB recommends community-wide GHG reduction goals for local climate action plans that would help the State achieve its 2030 and 2050 targets (CARB 2017). These goals, presented in the Scoping Plan Update, consist of reducing emissions to 6 $MTCO_2e$ per capita and 2 $MTCO_2e$ per capita by 2030 and 2050, respectively. Considering the overall statewide emissions in 1990 and 2014, and the projected statewide population in 2030 and 2050, these per-capita goals would be equivalent to reducing 2014 emissions by 40% by 2030 and 77% by 2050 (CARB 2016, Department of Finance 2014). The per capita targets were determined to be applicable to the County because a goal of the CAP is to achieve State goals and CARB's per-capita metrics provide the means to accomplish that.

The County's reduction targets are consistent with CARB's Scoping Plan Update's recommended community targets, as well as the State's 2014 GHG emissions inventory and the targets established by AB 32, SB 32, and EOs B-30-15 and S-3-05.

The ultimate framework for setting a local GHG reduction target is based on governing legislation (AB 32 and SB 32). CARB identifies local governments as essential partners in meeting State goals and makes recommendations on setting local targets. The State is on track to meet 2020 reduction targets; therefore, specific reduction goals for 2020 are not described in the Scoping Plan Update. A target equivalent to reaching 1990 levels by 2020 can be calculated by comparing the State's GHG inventories for 1990 and 2014. Per CARB's estimate of California's GHG inventory, the state emitted approximately 431 million

MTCO2e (MMTCO2e) in 1990 and 441.5 MMTCO2e in 2014, a two percent increase. Applying this statewide trend at the county level, the County would also need to reduce emissions to two percent below 2014 levels to match 1990 levels. The County does not have a 1990 GHG inventory with which to develop a County GHG target for 2020 due to data constraints; therefore, the State inventories taken in 1990 and 2014 are relied upon to establish reduction targets, which are then applied to the County's 2014 inventory data. The difference between the state's 1990 and 2014 emissions are used to determine the equivalent reduction from 2014 to achieve 1990 emissions at the local level.

Setting a target with respect to a baseline year, such as 2014, is standard industry practice in climate action planning. The original 2008 Scoping Plan developed by CARB recommended a reduction below baseline levels as a valid reduction target, in recognition of the challenges in developing a 1990 inventory for a local jurisdiction. Data used for developing the 2014 inventory represent the best available data, based on improved inventory methodologies and data collection procedures. The same level of rigor cannot be applied to a 1990 inventory and any attempts to extrapolate activity data (e.g., vehicle miles traveled, energy consumption) for 1990 would introduce a large margin of error and provide an inaccurate accounting of county emissions. Therefore, reliance on State data to determine relative reduction levels that can be applied to local 2014 emissions levels is a valid methodology to determine reduction targets. Emissions caps pursuant to AB 32, SB 32, EOs B-30-15, and S-3-05 are set at a statewide level; therefore, the relative reductions necessary from 2014 levels for the state are applied to the local inventory.

It should be noted that statewide GHG emissions have been declining since the original 2008 Scoping Plan. As State regulations to achieve GHG reductions have been implemented, they also have a positive effect on local emissions, as evidenced in the legislative reductions incorporated into the projections. The original Scoping Plan identified a 15% reduction target for local governments developing CAPs. However, that relative reduction was based on then-existing levels (i.e., 2005).

To meet reduction targets, the County will need to reduce emissions to:

- 3,147,275 MTCO2e in 2020
- 1,926,903 MTCO2e in 2030
- 738,646 MTCO2e in 2050

Because statewide emissions have declined since 2005, the relative reduction required is now lower to achieve the same absolute emissions level (i.e., 431 $MMTCO_2e$ by 2020). This does not imply that reduction targets for 2020 have been relaxed; rather, this reflects the decline in statewide emissions since 2005. In addition, 2020 is only the first milestone in the State's long-term GHG reduction strategy. Similarly, while the relative reduction target (the reduction percentage) in the CAP is different from that identified in the 2011 General Plan Update (GPU) Program Environmental Impact Report (PEIR), it is still consistent with the reductions mandated under AB 32 for the reasons discussed above. Inventory methodologies and data collection techniques have evolved since certification of the 2011 GPU PEIR; however, the overall framework of reduction targets is inherently based on State legislation.

Thus, consistent with CARB's recommended community targets and recent updates to the State's 2014 GHG emissions inventory, the following 2020 and 2030 adjusted reduction targets and 2050 goal should be achieved in the county:

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

Figure 2.3 and Table 2.4 show the GHG reduction targets alongside the County's emissions over time without including any measures and actions proposed in this CAP.

Attaining a two percent reduction in GHG emissions would require that annual emissions be reduced to approximately 3,147,275 $MTCO_2e$ in 2020, which is approximately 64,230 $MTCO_2e$ lower than 2014 levels. To achieve long-term GHG reductions, the County would need to reduce emissions to 1,926,903 $MTCO_2e$ by 2030,

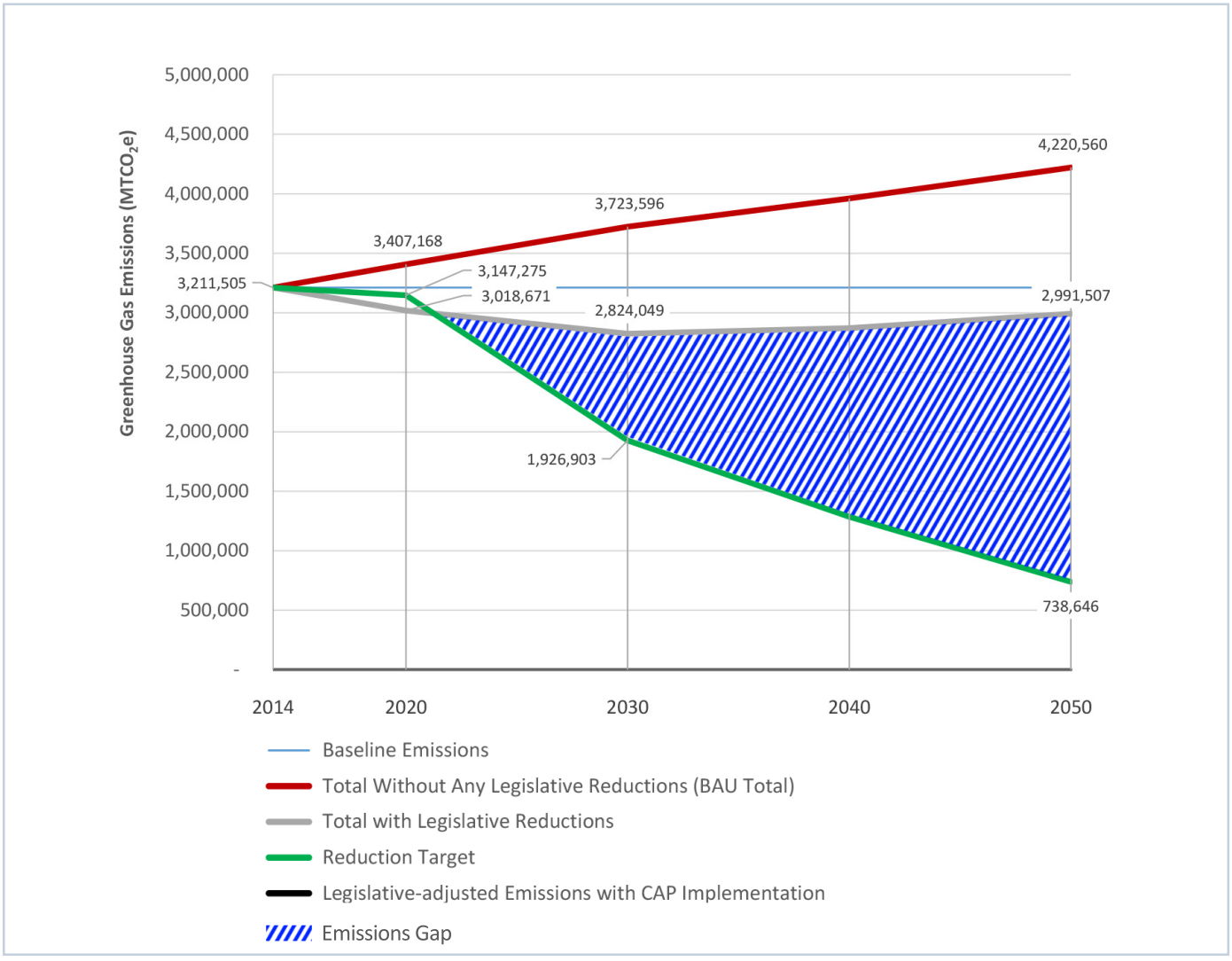


Figure 2.3 County GHG Emission Projections and Reduction Targets without CAP Measures

or approximately 1,284,602 $MTCO_2e$ (40%) below 2014 GHG emissions levels. To achieve a 77% reduction in GHG emissions from 2014 levels by 2050, the County would need to reduce its emissions to approximately 738,646 $MTCO_2e$ in 2050, which is approximately 2,472,859 $MTCO_2e$ lower than 2014 levels. A detailed technical analysis of the County's emissions reduction targets and long-term goal can be found in Appendix C.

Table 2.4 County GHG Emissions Projections and Reduction Targets without CAP Measures ($MTCO_2e$)

	2014	2020	2030	2050
Total Without Any Legislative Reductions (BAU Total)	3,211,505	3,407,168	3,723,596	4,220,560
Total with Legislative Reductions	3,211,505	3,018,671	2,824,049	2,991,507
2020 Reduction Target (Percent below 2014)		3,147,275 (2% below 2014)		
2030 Reduction Target (Percent below 2014)			1,926,903 (40% below 2014)	
2050 Reduction Goal (Percent below 2014)				738,646 (77% below 2014)

Notes: Columns may not add to totals due to rounding.
BAU = Business-as-Usual
GHG=greenhouse gases
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source: Data modeled by Ascent Environmental in 2017.

Legislative actions will help lower GHG emissions in the county by requiring improvements in energy efficiency in buildings and vehicles, lowering emissions associated with electricity generation, and reducing direct GHG emissions, such as from fuel combustion in off-road vehicles. The resulting legislative GHG reductions, shown in Table 2.3 will occur without any additional action on the part of the County.

The overall decrease in emissions is primarily due to reductions from the electricity sector resulting from cleaner electricity generation, improved energy efficiency in buildings, and more fuel efficient vehicles.

Emissions Gap

A comparison between the GHG reduction targets and emission projections highlights the remaining emissions gap, or reductions needed for the County to meet its future GHG reduction targets. The County is on track to meet its 2020 target with the help of existing legislation, such as the Renewables Portfolio Standard. However, to meet the 2030 target and 2050 goal, the County will need to achieve a reduction of 897,237 $MTCO_2e$ by 2030 and 2,253,066 $MTCO_2e$ by 2050 beyond legislative-adjusted projections. To close the emissions gap shown in Figure 2.3, this CAP proposes 11 strategies and 29 measures that the County would implement to reduce GHG emissions. Chapter 3 of the CAP discusses the GHG reduction strategies and measures aimed at closing the emissions gap for 2030.

General Plan Amendments

The GHG emissions inventory for the CAP does not include emissions attributable to proposed GPAs that would increase density/intensity above what is allowed in the General Plan. Even though there were GPAs that were adopted between 2011 (adoption of 2011 General Plan Update) and 2014 (inventory baseline year), none of these GPAs were constructed by 2014 and; therefore, their GHG emissions are not included in the 2014 inventory. The 2014 inventory is based on emissions-generating activities that existed on the ground in 2014.

The CAP GHG projections to 2020, 2030, and 2050 include GHG emissions from the GPAs that were adopted by the County between August 2011 (adoption of 2011 General Plan Update) and August 2017 (date at which the Draft CAP and CAP Draft Supplemental Environmental Impact Report [SEIR] were released for public review). See Appendix A for a detailed discussion regarding adopted GPAs, which were incorporated in the GHG projections.

General Plan Amendment projects currently in process and under County review, which have not been adopted by the San Diego County Board of Supervisors (Board) have not been included in the 2014 GHG emissions inventory or projections. These projects are analyzed in the cumulative impact analysis of the Draft SEIR, Chapter 2.7, because they represent current or reasonably foreseeable probable future projects. CEQA Guidelines Section 15130 requires discussion of cumulative impacts. As discussed in the Draft SEIR, Chapter 2.7, GPAs have the potential to result in a significant cumulative impact and also impact the ability of the County to meet its targets and goal. However, Mitigation Measure GHG-1 is provided to reduce the cumulative impact to less than significant. In addition, Mitigation Measure GHG-1 would be required for all future GPAs not discussed in the Draft SEIR. With incorporation of Mitigation Measure GHG-1, GPAs listed in the cumulative impact discussion of the Draft SEIR and all future GPAs that propose increased density/intensity above what is allowed in the General Plan will comply with the CAP and; therefore, will not interfere with the County's 2020 and 2030 GHG reduction targets or 2050 goal. General Plan Amendments would, therefore, comply with the threshold of significance, which is consistency with the CAP.



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 1,371,918 $MTCO_2e$ 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) *The 2017 Climate Change Scoping Plan Update* (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. Reduction measures in the Energy category, when combined with legislative reductions, achieve the greatest reduction potential locally, at 61% percent from 2014 levels.

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	229,482	55,030
Energy	125,140	579,675	727,633
Solid Waste	0	57,103	62,159
Water and Wastewater	254	17,920	19,738
Agriculture and Conservation	791	12,965	16,384
Total Reductions	**132,205**	**879,145**	**880,943**

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.

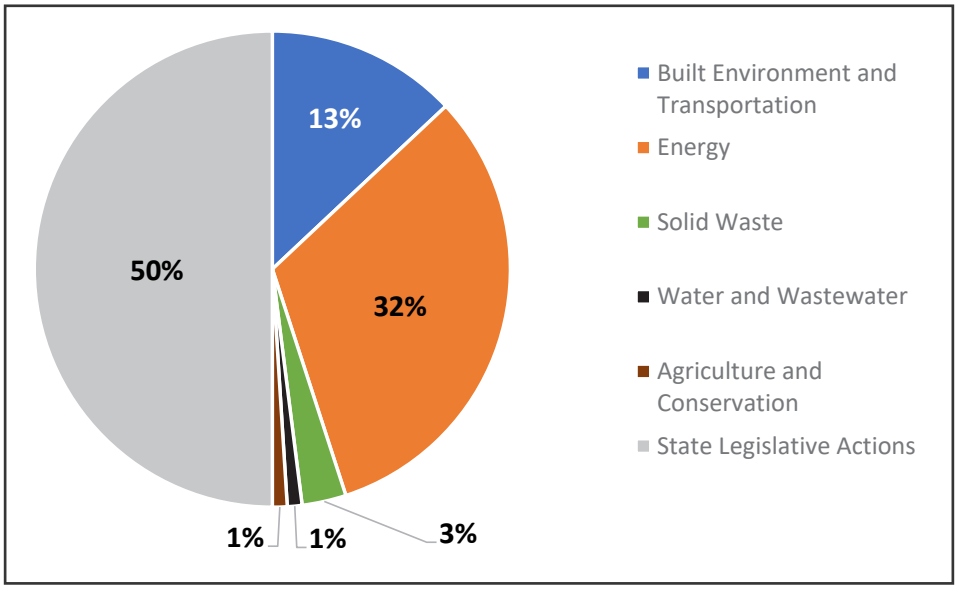


Figure 3.1 Total GHG Reductions from Strategies and State Actions in 2030

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	388,497	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	880,943
County Emissions with CAP	2,886,465	1,926,903	2,110,564
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	1,371,918

Notes: Columns may not add to totals due to rounding.
BAU = Business-As-Usual
CAP = Climate Action Plan
GHG = greenhouse gas emissions
$MTCO_2e$ = 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.

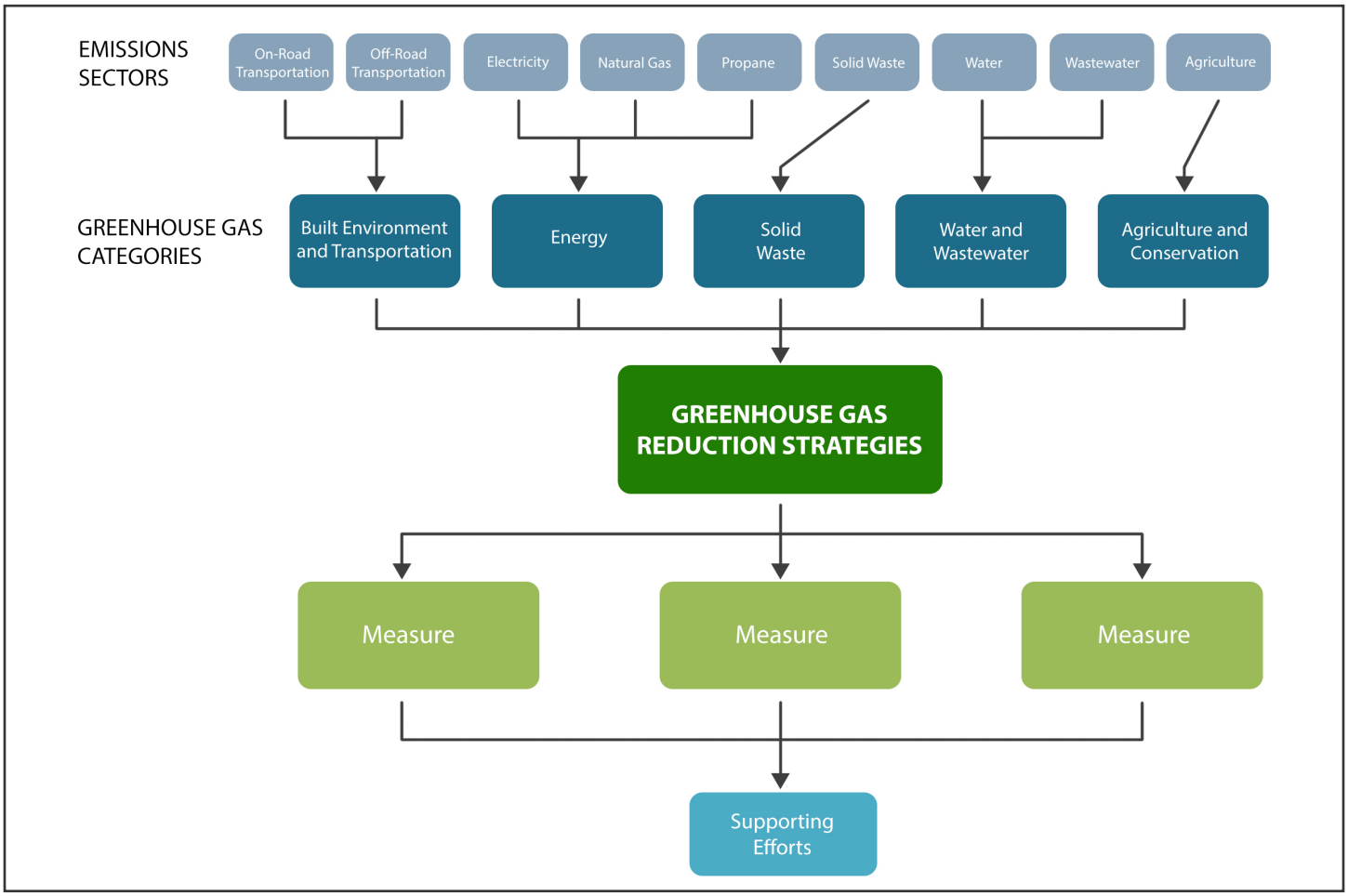


Figure 3.2 GHG Reduction Framework

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 29 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 29 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 29 quantifiable reduction measures and may be quantified in future CAP updates, as described in Chapter 5.

The 29 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:

- 10% of GHG reductions needed to meet the 2020 target;
- 13% of GHG reductions needed to meet the 2030 target (Figure 3.3); and
- 26% of GHG reductions needed to meet the 2050 goal.

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.

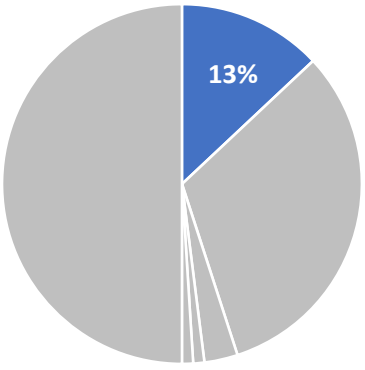


Figure 3.3 Built Environment and Transportation Reductions for 2030

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 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-3.1: Use Alternative Fuels in New Residential and Non-residential Construction Projects
- Measure T-3.2: Use Alternative Fuels in County-initiated Projects
- Measure T-3.3: Develop a Local Vehicle Retirement Program
- Measure T-3.4: Reduce the County's Fleet Emissions

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

- Measure T-4.1: Establish a 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. By not developing housing in the more remote areas, the county 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 and anticipated future requirements of the County Multiple Species Conservation Program (MSCP), 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. There are three Plans associated with the MSCP that are either approved, in-process or pending. MSCP Plans include the approved South County Subarea Plan, MSCP North County Plan (under development), and MSCP East County Plan (pending). The South County Subarea Plan was approved in 1997; the County anticipates completion of the MSCP North County Plan within the next five years. Since the inception of the MSCP, the County has purchased properties from willing sellers within the three MSCP planning areas. 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 North and East County MSCP	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	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

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 10 community plans by 2030 and an additional 9 community plans between 2031 and 2040



GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	13,949
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

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

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Update 10 community plans that include villages	PDS	2030	Medium
Update 9 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	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
10 community plan updates completed	2030
9 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, 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 New Non-residential Development Vehicle Miles Traveled

MEASURE SUMMARY

Reduce 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 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

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	1,454
2050 Anticipated GHG Reduction	2,508



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 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 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-3.1: Use Alternative Fuels in New Residential and Non-residential Construction Projects

MEASURE SUMMARY

Require new residential and non-residential construction projects in the unincorporated county to use alternative fuels in 10% of construction equipment during construction by 2030



GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	885
2050 Anticipated GHG Reduction	897

DESCRIPTION

This measure is a requirement. 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), or replacing equipment with electric alternatives, such as electric or hybrid-electric bulldozers, excavators or loaders, all of which are available on the market. Through ordinance development, the County will define alternative fuel compliance requirements for construction equipment, including implementation and monitoring mechanisms to ensure enforcement. Fuels could include renewable diesel for existing vehicles and construction equipment, and a transition to other fuel types such as renewable natural gas, CNG or electricity.

State and local agencies, including the San Diego County Air Pollution Control District (SDAPCD), implement incentive programs that provide monetary grants to private companies and public agencies to clean up their heavy-duty engines beyond that required by law. Businesses subject to the future ordinance, and that meet the incentive program requirements, may take advantage of these opportunities.

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-3.1: Use Alternative Fuels in New Residential and Non-residential Construction Projects (continued)

RELATED LEGISLATION

State
- Low Carbon Fuel Standard
- Low Emission Vehicle Standards
- Heavy-Duty Vehicle Fuel Economy
- California Airborne Toxics Control Measure

Federal
- Corporate Average Fuel Economy (CAFE) Standards (fuel efficiency)

CO-BENEFITS

- Air Quality
- Public Health
- Community Health

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend Title 8 of the San Diego County Code of Regulatory Ordinances	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
Identify financial incentives for private companies and public agencies to upgrade heavy-duty engines	Ongoing
Collaborate with SANDAG to provide outreach and education about the availability of alternative fuels	Ongoing
Develop strategies to address barriers to alternative fuel deployment	Ongoing
Provide outreach and education about grant opportunities and permitting processes for alternative fuel stations	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
10% of construction equipment in-use during new residential and non-residential construction in the unincorporated county 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-3.2: Use Alternative Fuels in County-initiated Projects

MEASURE SUMMARY

Require County-initiated 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	36
2050 Anticipated GHG Reduction	37

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), or replacing equipment with electric alternatives, such as electric or hybrid-electric bulldozers, excavators or loaders, all of which are available on the market. Through Board of Supervisors Policy development, the County will define alternative fuel compliance requirements for construction equipment, including implementation and monitoring mechanisms to ensure enforcement. Fuels could include renewable diesel for existing vehicles and construction equipment, and a transition to other fuel types such as renewable natural gas, CNG or electricity.

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-initiated 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
Amend Board of Supervisors Policy Number G-15 (Design Standards for County Facilities and Property)	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-initiated 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 800 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	866
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 pre-1997 passenger vehicle or light-duty truck (including sports utility vehicles and vans) to a contracted auto-scrapping facility. The program anticipates 800 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 800 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 San Diego Gas & Electric (SDG&E)	2030
Provide information to multi-family and non-residential property/business owners to leverage SDG&E'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
800 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 will implement the SEP's Transportation Strategy through the 2016 Green Fleet Action Plan Implementation Strategy to achieve GHG reductions from the County vehicle fleet. The County has established goals to achieve the 2020 target, which include transitioning two to five percent of the light-duty fleet to electric vehicles; converting 50% of all new vehicle purchases to their target green vehicle replacement standard; transitioning from petroleum diesel to renewable diesel; and reducing 20 County fleet vehicles.

This measure sets an additional performance standard for 2030 to achieve continued reductions. 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.

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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 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 Direct Investment Program

MEASURE SUMMARY

Close the 2030 GHG emissions reductions target gap of 190,262 $MTCO_2e$ through direct investments in local projects that would offset carbon emissions within the unincorporated county by 2030



GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	190,262
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 Carbon Offset 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 would 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 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 carbon offset 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
190,262 $MTCO_2e$ 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:

- 17% of GHG reductions needed to meet the 2020 target;
- 32% of GHG reductions needed to meet the 2030 target (Figure 3.4); and
- 65% of GHG reductions needed to meet the 2050 goal.

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 earlier than or beyond state 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, achievement of energy efficiency in existing buildings, and a water heater replacement program.

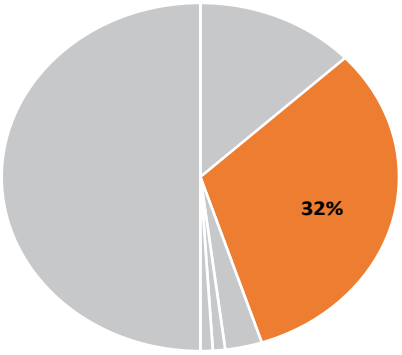


Figure 3.4 Energy Reductions for 2030

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

Strategy E-1: Increase Building Energy Efficiency

- Measure E-1.1: Improve Building Energy Efficiency in New Development
- Measure E-1.2: Use Alternatively-powered Water Heaters in Residential Development
- Measure E-1.3: Improve Building Energy Efficiency in Existing 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-2.2: Increase Renewable Electricity in Non-Residential Development
- Measure E-2.3: Install Solar Photovoltaics in Existing Homes
- Measure E-2.4: Increase Use of Renewable Electricity for County Operations

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 increase energy efficiency in both new and existing residential and non-residential buildings, including 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-1.1: Improve Building Energy Efficiency in New Development

MEASURE SUMMARY

Achieve 10% greater building energy efficiency in all new non-residential development than is required by the 2016 State Energy Code (Title 24 Part 6) by 2020; require all new residential development to meet the State's Zero Net Energy (ZNE) standards by 2020; and require all new non-residential development to meet the State's ZNE standards by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	38,708
2050 Anticipated GHG Reduction	145,215



DESCRIPTION

This measure is a requirement. The State is considering, but has not formally adopted, mandatory ZNE standards for all new residential construction starting in 2020 and new commercial construction starting in 2030. A ZNE building produces as much renewable energy on-site as it consumes in one year. Therefore, it is expected that residential development will need to install on-site renewable energy sources starting in 2020. The same is true of non-residential development starting in 2030.

Under this measure, the County will amend the Construction Codes to phase-in the State's ZNE standards by requiring all new non-residential development to achieve a 10% better efficiency than the 2016 State Energy Code (Title 24 Part 6) up to 2030. It is anticipated that the State will require ZNE for new non-residential development by 2030, at which time the County will be required to implement the State's ZNE standards. If the State does not adopt the non-residential ZNE standards, then the County Construction Codes will be amended to require the ZNE standards for non-residential development by 2030.

It is also anticipated that the State will require ZNE for new residential development by 2020, at which time the County will implement the State's ZNE standards. If the State does not adopt the residential ZNE standards, then the County Construction Codes will be amended to require the ZNE standards for residential development by 2020. The State has demonstrated that ZNE can be achieved through a combination of high-performance energy efficient design and maximizing on-site renewable energy production (e.g., solar and storage). This measure will be enforced through the County's current permitting processes.

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-1.1: Improve Building Energy Efficiency in New Development (continued)

RELATED LEGISLATION

2016 State Energy Code

CO-BENEFITS

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

ACTIONS

DESCRIPTION	RESPONSIBILITY	TIME FRAME	RELATIVE COST
Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes) to achieve a 10% greater building energy efficiency in all new non-residential development than required by the 2016 State Energy Code (Title 24 Part 6)	PDS	2020	Low
Amend the County Construction Codes to require all new residential development to meet the State's Zero Net Energy (ZNE) standards	PDS	2020	Low
Amend the County Construction Codes to require all new non-residential development to meet the State's Zero Net Energy (ZNE) standards	PDS	2030	Low

SUPPORTING EFFORTS	TIME FRAME
Through the County's Housing and Community Development Services (HCDS) department, sponsor energy efficiency improvements to 500 new residential dwelling units	2030
Collaborate with regional partners to provide outreach and education on renewable energy system finance programs	Ongoing
Continue to implement the County's Green Building Incentive Program	Ongoing
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
All new non-residential development achieves 10% greater building energy efficiency than required by the 2016 State Energy Code (Title 24 part 6)	2020
All new residential development meets the State's ZNE standards	2020
All new non-residential development meets the State's ZNE standards	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-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 natural gas by 2020

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	19,176
2050 Anticipated GHG Reduction	19,176



DESCRIPTION

This measure is a requirement. 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 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 natural 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

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, electric or tankless natural 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-1.3: Improve Building Energy Efficiency in Existing Development

MEASURE SUMMARY

Achieve energy efficiency improvements in one percent of existing residential and non-residential buildings in the unincorporated county by 2030 and an additional four percent by 2050

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	3,694
2050 Anticipated GHG Reduction	18,470



DESCRIPTION

This measure is a requirement and an incentive. Building energy efficiency audits and disclosures involve the analysis and documentation of a building's energy performance to drive improvements in energy efficiency and reduce energy use. Conducting energy efficiency audits helps to incorporate a home or commercial building's energy performance into its overall value, which may incentivize energy efficiency improvements. Through this measure, residential and non-residential remodel/renovation projects will be required to undergo an energy efficiency audit, which will be submitted to the County during the plan check process. Implementation of the recommended improvements identified by the audit will not be required as a condition of building permit issuance; however, the audits can incentivize property owners to make energy efficiency upgrades on their buildings. This measure anticipates that by 2030, approximately 1% of the existing residential and non-residential building stock in the county would implement the energy efficiency measures recommended by an audit.

In addition, property sellers will be required to provide a Real Estate Building Energy Efficiency Disclosure to prospective buyers. This tool will inform prospective buyers of a building's relative efficiency, which can incentivize new property owners to make energy efficiency upgrades on their buildings. The County will make the disclosure form available to real estate agents, who will then be required to submit completed forms to the County for tracking.

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-1.3: Improve Building Energy Efficiency in Existing Development (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

- Air Quality
- Energy Savings
- Public Health
- 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) to require an energy efficient audit prior to building permit issuance for remodels/ renovations	PDS	2020	Low
Amend Title 9 of the San Diego County Code of Regulatory Ordinances to require a building energy efficiency disclosure for real estate transactions at the point of sale (disclosure only)	PDS	2020	Low

SUPPORTING EFFORTS	TIME FRAME
Collaborate with regional partners to provide no- or low-cost energy efficiency audits	Ongoing
Through the County's Housing and Community Development Services (HCDS) department, sponsor improvements to 500 existing residential dwelling units to increase energy efficiency	2030
Continue to implement the County's Green Building Incentive Program	Ongoing
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
One percent of the existing building stock in the unincorporated county has implemented the energy efficiency improvements recommended by an energy efficiency audit	2030
Four percent of the existing building stock in the unincorporated county has implemented the energy efficiency improvements recommended by an energy efficiency audit	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.

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 15% below 2014 levels by 2030

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	6,486
2030 Anticipated GHG Reduction	8,207
2050 Anticipated GHG Reduction	9,084



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 15% 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 15% reduction in energy use intensity at County facilities below 2014 levels	DGS	2020	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 15% 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	230,368
2050 Anticipated GHG Reduction	256,166

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-2.2: Increase Renewable Electricity in Non-residential Development

MEASURE SUMMARY

Require installation of renewable electricity systems (e.g., solar photovoltaics, wind) on new non-residential development

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	13,444
2050 Anticipated GHG Reduction	13,444



DESCRIPTION

This measure is a requirement. This measure sets a mandatory requirement for new non-residential development to install renewable electricity systems to offset their electricity consumption. Through the ordinance development process, the County will define the minimum renewable electricity generation requirements to achieve the GHG reduction target. This requirement will be enforced through the building permitting process for new non-residential development until the State's Zero Net Energy (ZNE) standards are implemented by 2030, at which time the ZNE standards will supersede this requirement, as indicated in CAP Measure E-1.1.

This measure is not applicable to residential development because the State's residential ZNE standards are anticipated to go into effect by 2020. Therefore, incorporation of renewable electricity into new residential development will occur under Measure E-1.1 and associated GHG reductions have been accounted for in Measure E-1.1.

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-2.2: Increase Renewable Electricity in Non-residential Development (continued)

RELATED LEGISLATION

N/A

CO-BENEFITS

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

ACTIONS

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

SUPPORTING EFFORTS	TIME FRAME
Collaborate with regional partners to provide outreach and education to property owners on renewable electricity system financing programs	Ongoing
Continue to implement the County's Green Building Incentive Program	Ongoing
Implement the Comprehensive Renewable Energy Plan (CREP) Phase One Report	Ongoing

OUTCOMES

PERFORMANCE METRIC	TIME FRAME
Renewable electricity systems (e.g., solar photovoltaics, wind) installed on all new non-residential development, offsetting 100% of the electricity consumed	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-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 Renewable Electricity for County Operations

MEASURE SUMMARY

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

GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	4,083
2030 Anticipated GHG Reduction	5,755
2050 Anticipated GHG Reduction	5,755



DESCRIPTION

This measure is a County initiative. Currently, 2.6% 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 San Diego Gas & Electric (SDG&E). 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. In 2016, the County Board of Supervisors authorized staff to negotiate and execute one or more Power Purchase Agreements (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 Renewable Electricity 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	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 with renewables	2020
20% of the County's operational electricity generated 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 percent of the County's emissions in 2014. The CAP's Solid Waste measure will contribute:

- zero percent of GHG reductions needed to meet the 2020 target;
- three percent of GHG reductions needed to meet the 2030 target (Figure 3.5); and
- two percent of GHG reductions needed to meet the 2050 goal.

The measure under this strategy is derived from 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 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.

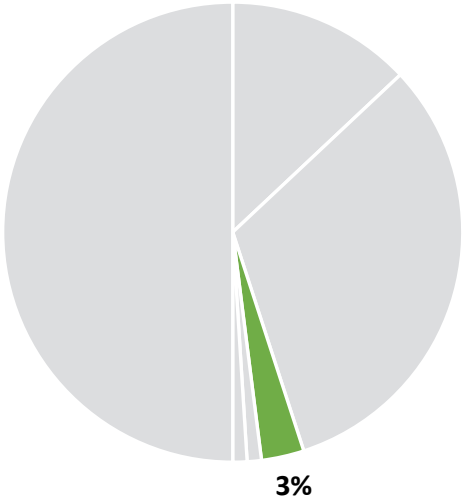


Figure 3.5 Solid Waste Reductions for 2030

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

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 includes this recent Board action as a measure.

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 75% solid waste diversion in the unincorporated county by 2030



GHG EMISSIONS REDUCTIONS	
2020 Anticipated GHG Reduction	0
2030 Anticipated GHG Reduction	57,103
2050 Anticipated GHG Reduction	62,159

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. By 2025, staff will return to the Board to request direction to establish a higher diversion target to make progress toward the 2050 GHG reduction goal.

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

N/A

CO-BENEFITS

- Job Generation
- Community Health
- Energy Savings

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
75% 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:

- Five percent of GHG reductions needed to meet the 2020 target;
- One percent of GHG reductions needed to meet the 2030 target (Figure 3.6); and
- Five percent of GHG reductions needed to meet the 2050 goal.

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.

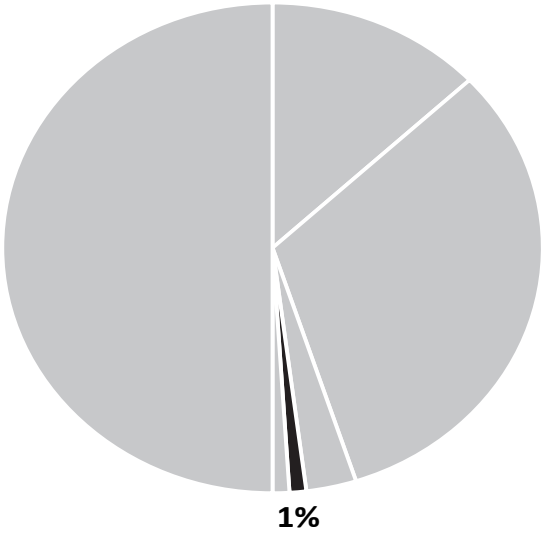


Figure 3.6 Water and Wastewater Reductions for 2030

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 in outdoor water use 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).

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 in outdoor water use for landscaping, then the County's Landscaping Ordinance would be amended by 2020 to achieve this standard. 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 outdoor water use 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 to provide rebates for rain barrels at County-sponsored outreach events; the current rebate for a 50+ gallon rain barrel is $35. 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 barrel rebates will be provided in the unincorporated county by 2020 and an additional 2,000 rain barrel rebates will be provided 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:

- two percent of GHG reductions needed to meet the 2020 target;
- one percent of GHG reductions needed to meet the 2030 target (Figure 3.7); and
- 13% of GHG reductions needed to meet the 2050 goal.

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.

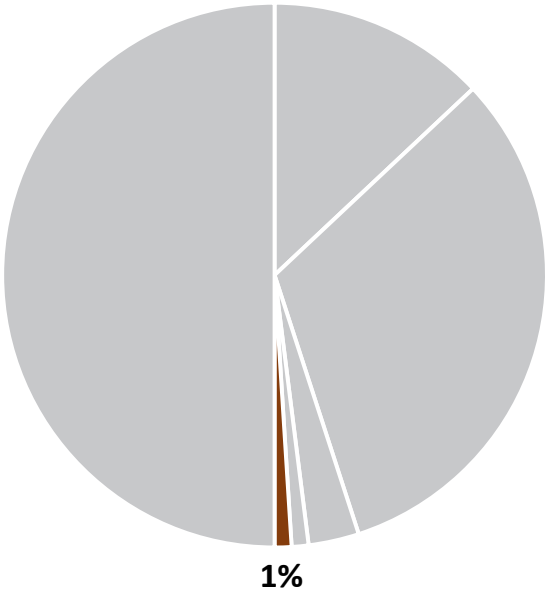


Figure 3.7 Agriculture and Conservation Reductions for 2030

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 adopt 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
Adopt a 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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4

CLIMATE CHANGE VULNERABILITY, RESILIENCY, AND ADAPTATION

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Introduction

The State has identified the changing climate as an issue that will have a wide variety of impacts on human health and safety, the economy, water supply, ecosystems, habitats, and the provision of basic services. Since 2006, the State has completed a series of studies documenting existing and potential climate change impacts in the county - including in the unincorporated county - and around the state. These potential impacts and the County's current and potential future efforts and strategies to increase adaptation and resilience are discussed in this chapter.

The State has adopted a climate adaptation strategy and adaptation guide. In addition to providing guidance, the State requires local governments to identify potential local impacts from a changing climate and incorporate climate adaptation and resiliency strategies into key planning documents such as general plans.

This adaptation planning process includes a total of nine steps as outlined in Figure 4.1. These steps can be grouped into three phases: assessment of vulnerability, development of adaptation strategies, and implementation.

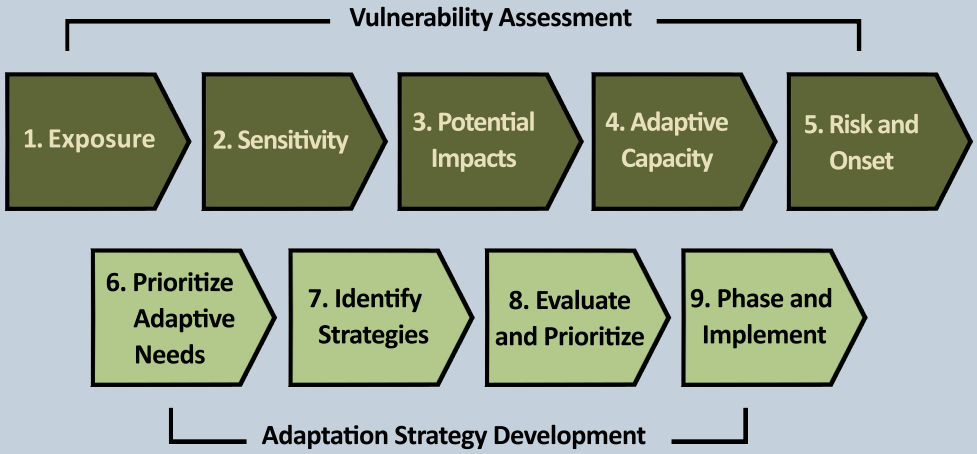


Figure 4.1 The Nine Steps in the Adaptation Planning Process

- **Phase One – Vulnerability Assessment:** The California Energy Commission (CEC) tool, Cal-Adapt, was used to conduct the Vulnerability Assessment of potential future local and regional impacts from a changing climate on the unincorporated county. This assessment identified a range of direct potential impacts such as increasing temperatures, annual precipitation changes, and sea-level rise, and indirect impacts such as increased risk of wildfires that could have negative effects on the health, economy, and environment in the unincorporated county. The detailed findings from this Vulnerability Assessment can be found in Appendix D.
- **Phase Two – Adaptation Strategy Development:** During this phase, climate adaptation strategies and measures are identified and prioritized to protect county populations and County assets that may be vulnerable to climate change. These strategies and measures are intended to increase the capacity to prepare for, respond to, and adapt to a changing

climate. Many adaptation strategies interface with multiple resources areas and should be aligned with other county planning efforts to be effective.

- **Phase Three – Implementation:** This is the point in the process where the implementation roadmap is created. This will include certain on-going initiatives, such as updating the county's portion of the the Multi-Jurisdictional Hazard Mitigation Plan (MHMP), Local Coastal Program, and the Safety Element of the General Plan as required by Senate Bill 379. Many of the Climate Action Plan geenhouse gas (GHG) reduction strategies and measures themselves will have important adaptation and resilience co-benefits. This chapter includes a more comprehensive list of potential implementation actions that the County will consider to increase climate adaptation and resiliency.

Summary of Climate Change Effects and Vulnerability Assessment

This section summarizes the results of the Vulnerability Assessment, which includes identification of local exposure to a changing climate and related effects, an assessment of potential areas of sensitivities, and consideration of how likely and quickly impacts will occur. The complete Vulnerability Assessment, which follows the first five steps of the Adaptive Planning Guide's adaptation planning development, can be found in Appendix D. More specific details on the historical timeframes referenced in the following sections can be found in Appendix D.

Where possible, effects of a changing climate in the county are characterized for two periods of time: mid-century (around 2050) and the end of the century (around 2100). Historical data are used to identify the degree of change for these two future periods in time.

Effects of a Changing Climate

The first step in assessing vulnerability is to identify how the county is exposed to effects from a changing climate now and into the future. To begin assessing potential impacts over time, the county used Cal-Adapt, a climate change scenario planning tool developed by CEC and the University of California, Berkeley, Geospatial Innovation Facility. Cal-Adapt downscales global climate simulation model data to local and regional resolution under both high and low global GHG emissions scenarios. Results from both emissions scenarios are considered in this summary and distinguished, where possible.

The direct, or primary, changes analyzed for the county include average temperature, annual precipitation, and sea-level rise. Secondary impacts, which can occur because of individual changes or a combination of these changes, are also assessed and include extreme heat and its frequency, wildfire risk, and changes in precipitation and hydrology (California Natural Resources Agency [CNRA] 2012:16-17).

Increased Temperatures

As described in this paragraph, annual temperatures are projected to climb steadily. The county's historical average annual maximum temperature, based on data from 1950 to 2005, is 74.9 degrees Fahrenheit (°F). Under the Low-Emissions Scenario (where emissions will peak at around 2040 and then decline), annual average maximum temperature is projected to increase to 79.8

ºF by 2099, an increase of 4.9 ºF (CEC 2017a). The annual average maximum temperature under the High-Emissions Scenario (where emissions continue to rise strongly through 2050 and plateau around 2100), is projected to increase 9.9 ºF to 84.8 ºF by the end of the century (2099) (CEC 2017b).

The county's historical average annual minimum temperature, based on historical data from 1950 to 2005, is 47.8 ºF. Under the Low-Emissions Scenario, annual minimum temperature is projected to increase to 53.3 ºF by 2099, an increase of approximately 5.5 ºF (CEC 2017c). The annual average minimum temperature under the High-Emissions Scenario is projected to increase to 57.7 ºF by 2099, an increase of approximately 9.9 ºF (CEC 2017d).

These increasing temperatures can exacerbate air quality issues such as increasing levels of ozone and particulate matter in certain areas leading to public health issues, including increased rates of cardiovascular and respiratory diseases, cancer, allergies, and cataracts (CNRA 2012: 31).

Increased Frequency of Extreme Heat Events and Heat Waves

Cal-Adapt defines the "extreme heat" day threshold for the county as 96.3 ºF or higher. Historically, when averaged over the land area of the unincorporated county, the county has experienced an average of 4.2 extreme heat days a year. The number of extreme heat days is projected to increase substantially by 2099. Under the Low-Emissions Scenario, the county is projected to experience an average of 33 extreme heat days between 2090 to 2099, an increase of about 29 days (CEC 2017e). Under the High-Emissions Scenario, the county is projected to experience an average of 67 extreme heat days between 2090 to 2099, an increase of about 63 days (CEC 2017f)

Heat waves, which can be defined as five or more consecutive extreme heat days, have been historically infrequent in the county, with no more than two heat waves occurring in a year. However, a significant rise in the frequency in heat waves is projected under both emissions scenarios. Under the Low-Emissions Scenario, projections show an increase of heat wave events with around three per year at the middle of the century and up to seven per year in 2090 (CEC 2017g). The High-Emissions Scenario also shows an increase in annual heat wave events, with up to five heat wave events occurring annually by mid-century and as high as 16 heat wave events occurring annually by the end of the century (CEC 2017h). Along with an increased frequency of heat events, heat waves are also projected to occur both earlier and later in the season, which historically started in late May/early June and ended in mid-September.

> Heat waves have been historically infrequent in the county; however, a significant rise in the frequency in heat waves is projected to occur due to the changing climate (CNRA 2012:5).

Changes to Precipitation Patterns

The region's water supply is partially drawn from the State Water Project, which depends on spring and early-summer snowmelt in the Sierra Nevada. While projections generally show little change in total annual precipitation in California, even modest changes could have a significant effect on California's ecosystems that are conditioned to historical precipitation levels. Intense rainstorms following drought conditions can cause severe runoff situations. In 2016, a number of intense rainstorms caused serious runoff, which impacted many park facilities and trails and caused severe erosion and sink holes. Further, traditional agricultural irrigation practices may become obsolete and wasteful as precipitation events become less reliable combined with increased demand associated

with population growth. Changes in weather patterns resulting from increases in global average temperatures could also result in a decreased volume of precipitation falling as snow in California and an overall reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the California Department of Water Resources (DWR) projects that the Sierra snowpack will decrease by 25% to 40% from its historic average by 2050 and 48% to 65% by 2100 (DWR 2008:4, 2013:3-64).

Reduced precipitation could lead to higher risks of drought, while increased precipitation may cause flooding and soil erosion (CNRA 2014:25).

The county is not located in an area where snow typically accumulates; however, major water districts and utilities in the county receive and depend on a notable amount of water from the State Water Project (i.e., 20%), which depends on spring and early-summer snowmelt in the Sierra Nevada for water supply. Additionally, 64% of water supply comes from imports from the Colorado River, 70% of which heads in the high elevations of the Rocky Mountains (San Diego County Water Authority [SDCWA] 2016, Christensen et al. 2004).

The Carlsbad Desalination Plant, which became operational in December 2015, provides a local drought-proof source of potable water. The facility can provide up to 50 million gallons per day of water, representing up to 10% of the region's drinking water (Poseidon Water 2017). The county overlays 37 discrete groundwater basins, which supply about six percent of the county's water supply. The State has designated four of these basins as medium-priority and subject to the Sustainable Groundwater Management Act (SGMA) (i.e., Borrego Valley, San Diego River Valley, San Luis Rey Valley, and San Pasqual Valley).

Cal-Adapt's annual averages tool depicts an annual average precipitation in the county from 1950 to 2005 of 14.6 inches. Under the Low-Emissions Scenario, annual precipitation in the county is projected to be 15.6 inches per year by the end of the century (2099), a rise of one inch (CEC 2017i). Under the High-Emissions Scenario, annual precipitation is projected to be 19.3 inches by the end of the century (2099), a rise of 4.7 inches (CEC 2017j).

Increased Wildfire Risk

The county's topography consists of a semi-arid coastal plain and rolling highlands which, when fueled by shrub overgrowth, occasional Santa Ana winds and high temperatures, creates an ever-present threat of wildland fire. Extreme weather conditions such as high temperature, low humidity, and/or winds of extraordinary force may cause an ordinary fire to expand into a less controllable, more intense fire.

According to the MHMP prepared by the Governor's Office of Emergency Services (OES), the county (including the incorporated cities) have a history of wildfires, with more than 1,000,000 acres of the region's 2,897,000 acres burned since 1950 (OES 2015:4-43).

Increased temperatures and changes in precipitation patterns associated are expected to increase the risk of wildfire in the county. Cal-Adapt's wildfire tool estimated an average of 21,042 acres burned each year from 1950 through 2005 due to wildfire in the county. Under the Low-Emissions Scenario, the tool projects an annual

In 2010, 91% of unincorporated county residents, lived in Very High, High, and Moderate Fire Hazard Severity Zones compared to the statewide average of seven percent.

average of 17,971 acres of burned land by 2050 and 24,546 acres by 2099. Under the High-Emissions Scenario, an annual average of 20,972 acres are expected to burn in 2050 increasing to 29,499 acres by 2099 (CEC 2017).

Increased Likelihood of Flooding

A changing climate is likely to lead to changes in the frequency, intensity, and duration of extreme events, such as sustained periods of heavy precipitation and increased rainfall intensity during precipitation events. These projected changes can lead to increased flood magnitude and frequency (Intergovernmental Panel on Climate Change 2014:14).

Average annual precipitation in the region ranges from 10 inches on the coast to approximately 45 inches on the highest point of the Peninsular Mountain Range that transects the county, and three inches in the desert east of the mountains.

In 2015, about 17,000 people and 7,000 residential and commercial buildings in the unincorporated county were located within the 100-year floodplain (OES 2015:4-81).

Several factors determine the severity of floods, including rainfall intensity and duration. Flash floods occur when a large amount of rain falls over a short period of time. The National Weather Service's definition of a flash flood is a flood occurring in a watershed where the time of travel of the peak of flow from one end of the watershed to the other is less than six hours.

Sea-Level Rise

According to the 2015 MHMP for the region, sea levels measured in La Jolla show a six-inch rise over the last century (OES 2015). The average global sea level rose approximately 7 inches during the last century. If sea-level changes along the California coast continue to reflect global trends, sea level along the state's coastline in 2050 could be 10-18 inches (0.25-0.45 meters [m]) higher than in 2000, and 31-55 inches higher (0.78-1.4 m) than 2000 levels by the end of this century (CEC 2012:9).

Only 1.64 square miles (1,050 acres) of unincorporated areas exists within the coastal zone, none of which contains coastline. As such, sea-level rise impacts to the unincorporated county would be substantially less as compared to the region (County 2017).

Current Actions

The County has already begun to address many of the challenges associated with a changing climate through existing local policies, plans, programs, resources, and institutions. On a planning level, the county addresses current and future impacts related to existing natural hazards, as evidenced by the update to the MHMP in 2015, which identified current hazard risks and mitigation strategies for flooding, sea-level rise, extreme heat, drought, earthquakes, and fires.

Furthermore, the General Plan includes policies aimed at reducing local contributions to GHG emissions and encourages sustainable land development, mobility, water use, waste management, and energy use; best management practices; and ecological stewardship (County 2011). It also covers vulnerable populations, including policies aimed at achieving more equitable

outcomes for low-income populations in the county, as well as its aging population that requires better access to public services and housing.

In addition to planning efforts, the County has embarked on a number of climate adaptation-related efforts, which are summarized in the following sections.

The County adopted a landscaping ordinance to conserve water use for landscaping through efficient design and technology, while respecting the economic, environmental, aesthetic, and lifestyle choices of individuals and property owners (County Code Title 8, Division 6, Chapter 7 Section 86.701 et seq.).

Efforts Related to Increased Temperature and Extreme Heat Frequency

The County does not currently have long-term mitigation plans or adaptation strategies in place for extreme heat, due to historically moderate temperatures. However, the County does have a Comprehensive Excessive Heat Response Plan for emergent heat waves. Additionally, the County's Public Health Services Department is currently engaged in evaluating the county's vulnerability to temperature-related health risks and plans to pursue additional adaptation planning to prepare the county for high heat associated with a changing climate. The MHMP recognizes extreme heat as a hazard for the county and Cool Zones are available during periods of extreme heat.

Efforts Related to Changes in Precipitation Patterns and Water Supply

The County and local agencies have several water conservation programs, including rebates for appliances and water saving devices, guidance on deployment of greywater systems, recycled water programs, and landscaping and watershed ordinances. However, the county is still currently vulnerable to water supply issues due to drought, increased temperatures, and other factors. The primary local purveyor of water, SDCWA, has developed a Water Shortage and Drought Response Plan that outlines a series of potential actions to respond to a shortage of imported water supplies due to drought conditions. With the construction of the planned local water supply projects, as specified by the SDCWA's Urban Water Management Plan and once the Metropolitan Water District's Integrated Water Resources Plan is fully implemented, no water shortages are anticipated within the SDCWA's service area through 2030 (SDCWA 2012). The Integrated Water Resources Plan is a blueprint for long-term water supply reliability in Southern California. In addition, the region can rely on local drought-proof sources of water such as the Carlsbad Desalination Plant for a portion of the demand. However, impacts from a changing climate are expected to occur on a longer timescale as previously described. Therefore, continued long-term responses from local agencies will be necessary to adapt to changing water supplies. The State has identified four groundwater basins as medium-priority and is subject to the SGMA. Notably, groundwater sources represent approximately eight percent of the county's water supply (see Appendix A), but groundwater is the only source of water for some residents in the eastern portion of the county.

Efforts Related to the Increased Risk of Wildfire

The San Diego region is at high risk for wildfires. Programs and policies in place show a current capacity to address this risk. Increased temperatures and potential prolonged periods of drought will create a more wildfire-prone landscape. The county will need to continue to adapt to this projected increase.

Efforts Related to The Increased Likelihood of Flooding

Levees and structures have been built to protect the county from a 100-year flood event and the Flooding Management Plan addresses structural weaknesses in flood infrastructure. Also, the 2014 San Diego County Emergency Operations Plan, combined with the completed evacuation plans in the county, provides important details regarding flood protection and evacuation. However, evacuation plans have not been completed for all unincorporated communities within the county. The systems in place will need to be updated to account for potentially more intense storms.

Efforts Related to Sea-Level Rise

Less than one percent of the region's population (7,498 residents) live in areas at risk of inundation from a 55-inch rise in sea level by 2100 (California Building Resilience against Climate Effects [CalBRACE] 2016). Even fewer residents in the unincorporated county live within the coastal zone. As a result, the county is not considered high risk for sea-level rise related impacts; however, many residents of the unincorporated county commute to jobs in incorporated cities which are affected by sea level rise. Inundation of roads and electrical and natural gas infrastructure could affect the day-to-day functions of unincorporated county residents. More data and studies will need to be conducted as environmental conditions change in the coming years.



Increased temperatures and potential prolonged periods of drought create a more wildfire-prone landscape.

Resiliency and Adaptation Strategies

This section outlines strategies for the County to consider in the next update of the MHMP and the Safety Element of the General Plan to further its climate adaptation efforts. These strategies can build upon current efforts to be more sustainable, adaptive, and forward-thinking. The General Plan contains several policies to reduce local contributions to GHG emissions and encourage sustainable land development, mobility, water use, waste management, and energy use; best management practices; and ecological stewardship (County 2011). The strategies within this section represent potential opportunities to prepare for the future effects of a changing climate. Other County plans, programs, efforts, and policies can support this vision and contribute to addressing risks and vulnerabilities.

Adaptation strategies are classified into five categories to address identified vulnerabilities: temperature, wildfire, precipitation, flooding, and sea-level rise. Each category considers programs and policies the County may implement to remain responsive to the challenges created by changing weather patterns. Strategies also have the potential to provide other important benefits to the community, or co-benefits. These benefits are identified within each strategy, where applicable.

Strategies that can be considered by the County are categorized as follows:

- Prepare for Increases in Temperatures and Extreme Heat
- Prepare for Changes in Precipitation Patterns and Water Supply
- Prepare for Increased Wildfire Risk
- Prepare for Increased Flood Risk
- Prepare for Sea-Level Rise

Co-Benefits:

- Lowered Energy Demand
- Lowered Energy Bills
- Lowered Building and Operating Costs
- Reduced Fossil Fuel Reliance
- Improved Air Quality
- Improved Quality of Life

Prepare for Increases in Temperatures and Extreme Heat

Temperature-related impacts due to changing weather patterns are likely to affect the unincorporated areas in several ways. Increased average temperatures, along with more frequent extreme heat events, are likely to increase already high temperatures, in what are known in developed areas as urban heat islands. Built-up areas tend to have a prominence of asphalt and less vegetation which create, intensify, and retain heat, a phenomenon known as the Urban Heat Island Effect (UHIE). Other human activities that contribute to the UHIE include combustion-engine vehicles and air conditioning. To help curb the UHIE in developed areas, the County can incorporate "green" and "cool" infrastructure into new and existing development.

Examples of green infrastructure include trees and climate-appropriate landscaping for increased shade and reduced pavement, complete streets (through reflective pavement, landscaping, and green infrastructure), rain gardens, and rooftop gardens. The County can also incorporate cool pavement and cool roofs (with high reflectivity) in new and existing development while also including more shade trees in parking lots. Additionally, implementation of electric vehicle charging infrastructure (e.g., on carports) and improved transit would serve to reduce the UHIE as well.

The county's agricultural industry will also be affected by extreme heat. Shorter, warmer winters, including warm nighttime temperatures may reduce or eliminate the required number of "chill hours" that specialty and other crops need to bud. Measures to improve the adaptive capacity of the county while maintaining a thriving agricultural industry will involve transitioning to the production of crops more appropriate for a warmer climate.

Understanding that health-related risks increase along with average temperatures, the County will continue to collaborate amongst various departments to ensure that the proper outreach programs and plans are in place to deal with heat-related illnesses associated with warming.

The following strategies can help the County address heat-related impacts:

- Collaborate with regional partners on temperature and extreme heat preparedness initiatives, such as:
  - Mapping of critical infrastructure vulnerable to extreme heat events;
  - Outreach programs for outdoor workers and others susceptible to extreme heat;
  - Education of disadvantaged communities on heat-related risk and methods to prevent heat-related illness;
  - Updates to the Excessive Heat Response Plan prepared by the Health and Human Services Agency;
  - Research on the effects of a warmer climate on the agricultural industry; and
  - Understanding the tolerance of current crop mixes to withstand increased temperatures.

Prepare for Changes in Precipitation Patterns and Water Supply

The unincorporated area's exposure to water supply constraints and the need to protect water quality may increase with a changing climate. Increased temperatures, particularly in the Sierra Nevada, which supports the State Water Project, and Rocky Mountains, which heads the Colorado River, will lead to earlier and faster snowmelt,

which may leave the county vulnerable during dry months (July-September). Further, as temperatures rise, precipitation will fall more often at high elevations as rain rather than snow, which will reduce the Sierra Nevada and Rocky Mountain snow packs that the region needs for surface water supply. These changes are also likely to exacerbate drought in the state, which is already historically vulnerable to prolonged dry periods.

These conditions, if combined with a business-as-usual approach, will result in potentially severe impacts on the county's agricultural and operations sectors. Increased temperature will increase rates of evapotranspiration (i.e., transfer of water from land to atmosphere, from plants), which will increase water demand; thus, requiring improved irrigation systems and more resilient water supplies. To prepare for these conditions, the County, SDCWA, local water districts, and others will continue to evaluate the vulnerabilities of the county's water supply systems and networks through collaboration with water-related federal, State, and local agencies and organizations. These collaborative efforts will include the deployment of innovative options to improve water-use efficiency and conservation capacity to meet future water demand.

The following strategies can help the County address water supply issues:

- Collaborate with regional partners on water supply systems and conservation efforts, such as:
  - Evaluation of water supply systems and network vulnerabilities;
  - Use of on-site greywater and rainwater reuse, and recycled water systems;
  - Transfer of knowledge and technologies to assist farms with new production methods and drought-tolerant species;
  - Continued efforts to reduce potable water use in outdoor landscaping;
  - Expansion of existing water conservation education outreach programs for residents and businesses; and
  - Collaboration with federal, State, and local agencies and organizations to identify future water supplies, explore alternative supply sources, and improve capacity.

Prepare for Increased Wildfire Risk

The county is already at high risk of wildfire. The unincorporated areas contain high concentrations of Moderate, High, and Very High Fire Hazard Severity Zones (California Department of Forestry and Fire Protection 2007). In 2010, 91% of unincorporated county residents lived in Very High, High, and Moderate Risk wildfire areas as compared to the statewide average of seven percent (CalBRACE 2016; OES 2015:493). Increased frequency and intensity of wildfires will directly affect the safety of populations living within or near wildland areas (i.e., wildland-urban interface) prone to wildfire.

In addition to increased threats to human safety, the increased risk of catastrophic wildfire results in the release of harmful air pollutants into the atmosphere, which dissipate and can affect the respiratory health of residents across a broad geographical scope. Particulate matter (soot and smoke), carbon monoxide, nitrogen oxides, and other pollutants are emitted during the burning of vegetation, and can cause acute (short-term) and chronic (long-term) cardiovascular and respiratory illness, especially in vulnerable populations such as the elderly, children, agricultural and outdoor workers, and those suffering from preexisting cardiovascular or respiratory conditions.

Additionally, wildfire can cause direct and indirect damage to electrical infrastructure. Direct exposure to fire can sever transmission lines, and heat and smoke can affect transmission capacity. Furthermore, due to historical forest management trends over the past century, increased temperatures, and more frequent drought, California wildfires are characteristically hotter and more intense. As such, soil structure and moisture retention are damaged leading to increased susceptibility to erosion or landscapes. These conditions may result in adverse impacts to hydropower infrastructure.

To prepare for these conditions, the County and other relevant agencies and organizations will need to adopt measures to reduce the potential for catastrophic wildfires to occur and the adverse health impacts associated with wildfire. Additionally, to preserve water quality and ecological health, the County will engage in restoration efforts in previously burned and future burn areas.

The following strategies can help the County address increased wildfire risks:

- Collaborate with regional partners on wildfire prevention and preparedness, such as:
  - Mapping to identify locations that are newly at risk, or at higher risk for fire hazards;
  - Mapping of critical infrastructure in previously burned areas and in locations vulnerable to wildfires, and upgrades to infrastructure where applicable;
  - Strategy coordination with federal, State, and local agencies to establish ecological recovery programs;
  - Coordination and improvement of emergency preparedness systems; and
  - Expansion of existing underground utilities program.

Prepare for Increased Flooding Risk

Unincorporated areas of the county are vulnerable to flash flooding. In 2015, about 17,000 people and 7,000 residential and commercial buildings were in the 100-year floodplain and approximately 20,000 people and 8,500 residential and commercial buildings were located in the 500-year floodplain in the unincorporated areas (OES 2015:4-81). Further, infrastructure (e.g., roadways, power lines) can be damaged during flood events, which will disrupt communications, energy transmission, public services, and transportation systems.

Floodwater can interact with sources of pollution and distribute hazardous pollutants locally and regionally. The resultant water contamination may result in human health impacts, as well as degradation of ecosystems. Further, catastrophic flooding can erode topsoil, destroy crops, and impair ecosystem health.

The County could use several measures to restore the natural environment to combat flooding. Identifying streamside areas that could be restored will not only buffer buildings, roads, and crops from floods, but will also improve natural landscapes and air quality.

The following strategies can help the County prepare for increased flooding risks:

- Collaborate with regional partners on flooding preparedness initiatives, such as:
  - Evaluation of and improvements to stormwater infrastructure for high-intensity rainfall events;
  - Improvements to sewage and solid-waste management infrastructure;
  - Use of pervious pavements and landscaping in developed areas;
  - Mapping of critical facilities and infrastructure

locations vulnerable to flooding and upgrade and/or relocation of infrastructure where applicable;

- Replanting of bare or disturbed areas;
- Implementation of the MHMP to address climate change-related flooding impacts; and
- Improve flood warning and information dissemination.



Unincorporated areas of the county are vulnerable to flash flooding.

Prepare for Sea-Level Rise

Less than one percent of the region's population (7,498 residents) live in areas at risk of inundation from a 55-inch rise in sea level by 2100 (CalBRACE 2016). This rise in sea level may put these residents at risk of physical injury and property loss. Moreover, sea level fluctuates to higher-than-average levels due to high astronomical tides, wind, waves, and storm surges. Presently, the San Diego coast experiences one hour of high sea levels per year on average; however, by 2030, high sea levels are expected to occur 12 hours per year on average and 62 hours per year by 2050 (OES 2015). Notably, only 1.64 square miles (1,050 acres) of unincorporated land exists within the coastal zone, none of which contains coastline. As such, sea-level rise impacts to the unincorporated areas will be substantially less as compared to the region as a whole (County 2017), though impact to the livelihood and day-to-day activities of unincorporated county residents will likely be affected through the inundation of infrastructure in incorporated cities.

The following strategies can help the County address risks related to sea-level rise:

- Collaborate with regional partners on sea-level rise preparedness initiatives, such as:
  - Mapping to identify areas affected by sea-level rise;
  - Support and monitor ongoing analysis of sea-level rise data; and
  - Updates to the County's MHMP to incorporate sea-level rise.



5

IMPLEMENTATION AND MONITORING

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Introduction

This chapter outlines how the County of San Diego (County) will implement the Climate Action Plan (CAP) and monitor progress towards achieving the 2020 and 2030 greenhouse gas (GHG) emission reduction targets and long-term 2050 goal. Successful implementation of the reduction measures described in Chapter 3 will ultimately determine whether CAP targets are met.

As a result, measures must be regularly assessed and continuously monitored to ensure:

- All measures include clearly defined steps necessary for implementation;
- Individual measures are contributing to the overall GHG reduction target;
- The CAP is on track to achieve its overall GHG reduction targets; and
- Beneficial community outcomes are attained.



Continuous assessment and monitoring of measures will be necessary to ensure the County is on track to meet its targets.

Implementation Strategy

Implementation of the CAP includes a combination of regulations, programs, incentives, outreach, and educational activities. This includes County initiatives such as the Strategic Energy Plan, Comprehensive Renewable Energy Plan (CREP), Multiple Species Conservation Program, Strategic Plan to Reduce Waste, Purchase of Agricultural Conservation Easement Program, and the Local Coastal Program among others. County efforts complement and build on other federal and State efforts. Regular monitoring will allow the County to track the effectiveness of the CAP strategies and measures, update the emissions inventory, and make adjustments to keep on track towards the emissions reduction targets.

The CAP is not a static document, but a living document. The CAP must be regularly updated to reflect and respond to changing technology, federal and State regulations, demographics, and market conditions to be effective.

Implementation Responsibilities

After adoption, the CAP will continue to be maintained by the County Department of Planning & Development Services (PDS). Key staff in PDS, with active participation and assistance from the Sustainability Task Force, will facilitate and oversee implementation, monitoring, and reporting on the progress of each measure. Staff will track



County staff uses building automation technology to track energy consumption and production at the zero-net energy Alpine Library.

progress against the expected quantified outcome of each GHG reduction measure. Departments responsible for monitoring of each specific measure are shown in Table 5.1.

The Sustainability Task Force, formerly the Internal Working Group, is comprised of representatives from 11 County departments. The Internal Working Group collected data for the GHG emissions baseline inventory and projections, reviewed CAP best practices, defined the GHG reduction measures, and assisted in the overall development of the CAP. The Internal Working Group was transitioned to a Sustainability Task Force by the San Diego County Board of Supervisors (Board) in February 2017 to continue collaboration in implementing the CAP and other sustainability efforts. The goal of the Sustainability Task Force is to implement and monitor the CAP and other sustainability, energy efficiency, and renewable energy plans, policies, and programs.

In addition, the Sustainability Task Force will serve the following functions:

- Implement the CREP Phase One Report Board of Supervisors approved actions:
  - Track community solar and wind initiatives in the county;
  - Research how to increase renewable energy generation, transmission, use, and storage in the county;
  - Develop strategies to address barriers to alternative fuel deployment;
  - Promote vetted renewable energy finance mechanisms, such as Property Assessed Clean Energy Programs, bonds, peer-to-peer lending or crowdfunding;
  - Develop and implement a renewable energy education and outreach strategy; and
  - Develop and implement a strategy to support renewable energy legislation that benefits the county.
- Provide a consolidated resource for the public to learn about the County's sustainability-related efforts including: projects, policies, plans, and programs; finance mechanisms; and training and workforce development opportunities.

Implementation Methods

The County will implement strategies and measures of the CAP through several types of programs and activities that can be grouped into the following categories:

Code Updates: Several of the measures in the CAP are implemented through new or amended regulations as part of County Code updates. The County, for example, will need to incorporate the California Green Building Standards Code Tier 1 into the County Code, along with requiring that new or replacement residential water heating systems be alternatively-fueled and/or electrically powered.

Financing and Incentives: Identifying mechanisms for funding and allocating resources, such as developing incentive programs to ensure that the CAP is successfully implemented.

Program Research and Development: Several supporting efforts are programmatic in nature and will require additional research and development for proper implementation to occur (e.g., developing programs to promote locally grown and raised food). These programs may require future partnerships and financing mechanisms to be in place down the road, but most immediately, County staff will need to integrate program research and development into the context of existing workloads and programs whenever possible.

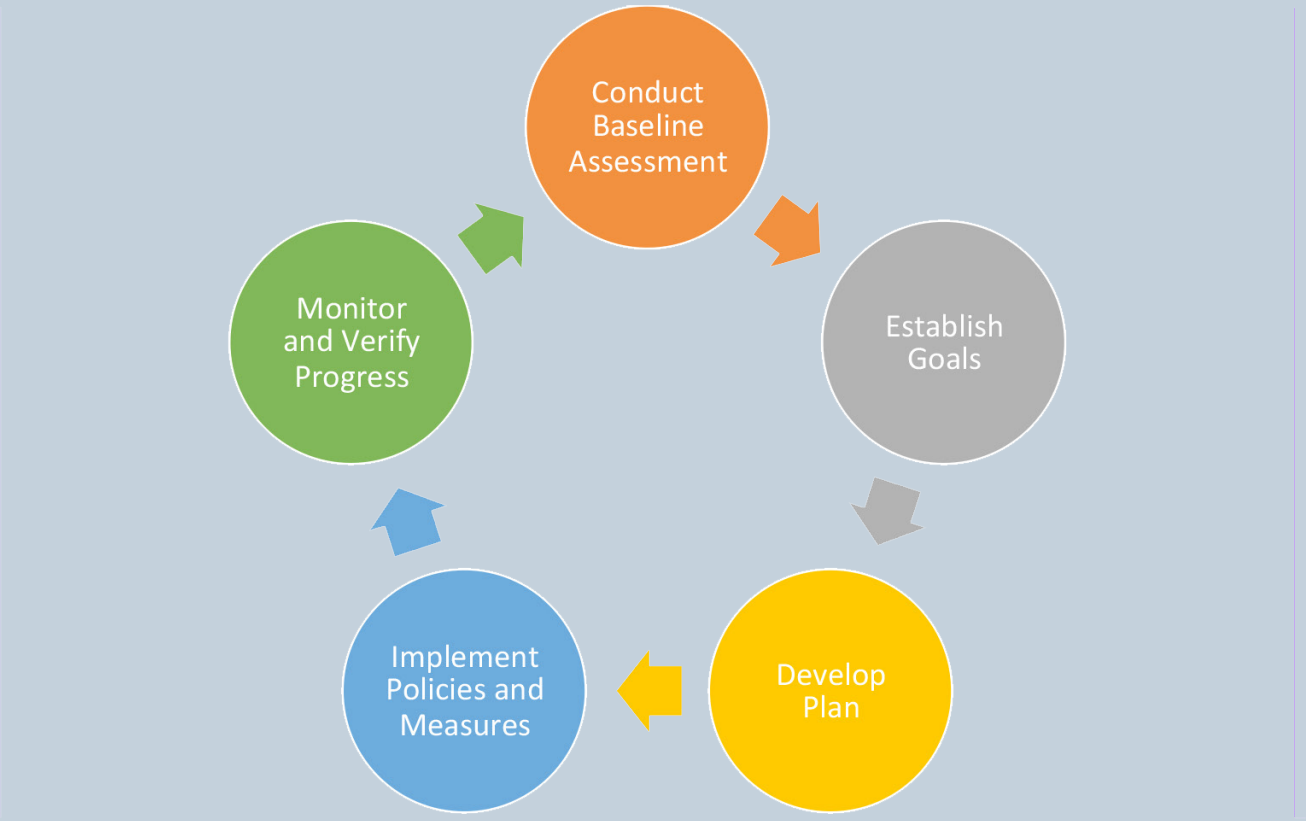
Partnerships: Inter-agency coordination and partnerships with other organizations is critical to ensuring implementation of certain measures.

Education and Outreach: Educational efforts about the objectives of the CAP will create support for the CAP and involve the community in its implementation.

Measure descriptions in the monitoring program (Table 5.1) specify the mechanisms that will be used to implement individual measures.

Implementation Funding Sources

The County will leverage financing sources by monitoring funding opportunities and financing mechanisms to successfully implement CAP measures. Ongoing resource management will be required to maximize efficiency. Program incentives and funding sources will change over time; therefore, the County will stay up-to-date on available resources as GHG reduction measures are implemented. Potential funding sources to support GHG reduction measures are listed in Table 5.2 at the end of the chapter. Funding sources are classified into various categories based on their origin. The applicability of each funding category to individual GHG reduction measures is shown in the monitoring program in Table 5.1.



The CAP is a dynamic document that will be continuously assessed and monitored.

Monitoring and Updates

The CAP presents a broad-based strategy to significantly reduce GHG emissions and improve the sustainability and resilience of the county. However, the CAP will need to be updated and maintained if it is to remain relevant and effective (Figure 5.1). Thus, County staff will need to evaluate and monitor plan performance over time and make recommendations to alter or amend the plan if it is not achieving the proposed reduction targets. This will include conducting periodic GHG emissions inventory updates and analyzing measure performance.

The CAP is a dynamic document that will be continuously assessed and monitored. Regular monitoring and performance measuring of CAP activities will allow the County to make timely adjustments to existing measures; replace ineffective or obsolete actions; or add new measures as technology, federal and State programs, and circumstances change. Adjustments will be made to the CAP if measures fall short of the targets or additional measures become available. As new data and resources, future federal and State legislation and regulations, improvements in energy efficiency and technology, new regional plans, updates to building standards or new GHG emission calculation standards become available, the County may amend the CAP to provide additional flexibility or clarity. The County recognizes that flexibility in implementation is necessary to allow the County to evolve its strategies to achieve the most effective CAP.

Over time, new technology will become available and new federal and State laws will influence how GHG emissions are reduced. The County will need to be flexible to ensure the CAP remains effective and relevant.



Five-year CAP updates will allow the County to add or adjust measures to stay on course.

CAP Annual Monitoring Report

The County will conduct annual monitoring beginning in 2019, which will be one year after the anticipated approval of the CAP, to track progress and identify where further efforts and additional resources may be needed. Monitoring reports will be published annually beginning in year 2019, which will include the status of measure implementation using monitoring metrics and the progress in meeting the reduction targets. The County will conduct ongoing public outreach during CAP implementation through the Sustainability Task Force.

Proper implementation and tracking of CAP performance allows County staff, the Sustainability Task Force, Board, and the public to monitor the progress and effectiveness of each measure in the CAP.

GHG Emissions Inventory Updates

While based on extensive research and analysis, the County's GHG inventory represents a snapshot in time. As technologies and markets change and the County implements the measures in the CAP, new inventories will be prepared to track progress. As a result, the GHG inventory will be updated regularly using current data and assumptions. Under its Regional Framework schedule, the San Diego Association of Governments (SANDAG) will be updating GHG emissions inventories every two years beginning with the year 2016.

To remain consistent with SANDAG's Regional Framework schedule, the County will coordinate updates to the County's GHG inventory every two years beginning with the year 2018, after CAP adoption. The inventory results will be published in 2020 for the 2018 GHG Inventory. The GHG inventory updates will provide information about emission reductions over time, in comparison to the 2014 inventory and 2020, 2030 and 2050 emissions projections identified in this CAP.

CAP Updates

Based on findings from the annual monitoring reports and inventory updates, the County will prepare a CAP update every five years beginning in 2025 (i.e., the first CAP update to be presented to the Board of Supervisors by year 2025). The CAP update will coincide with the County's Strategic Plan, General Management System, and Capital Improvement Program five-year review cycles. The CAP update will include updated inventories, adjustments to reduction measures, as necessary, and any changes to land use projections to achieve consistency with zoning and current General Plan land use designations and policies. Future updates to the CAP will comply with CEQA Guidelines, including Sections 15162, 15163 or 15164.

A number of measures in the CAP rely on adoption of amendments to the County Code and/or Zoning Ordinance. Individual Code and Ordinance updates will be presented to the Board by County staff and their implementation will be dependent upon Board approval. If a particular measure is not adopted by the Board, the County will adjust the amount of reductions needed from Measure T-4.1 related to direct investments in local carbon offset projects or consider additional reduction measures to achieve an equivalent amount of reductions specified for the proposed Code or Ordinances update.

The County will evaluate measure performance through the CAP Annual Monitoring Report. If a particular measure is not performing as expected, adjustments will be made during the next CAP update to compensate for any reduction shortfall. The next CAP update in 2025 will be an opportunity for the County to evaluate progress and course correct to meet the 2030 GHG reduction target.

2018	**CAP Adopted** Board adopts CAP and staff begins to implement CAP measures.
2018-2020	**Initial Set-up** Staff performs initial start-up tasks and implementation of data tracking.
2019	**Annual CAP Monitoring Report** Staff prepares and publishes an annual monitoring report, assessing the CAP's annual performance in achieving targeted goals.
2020	**GHG Emissions Baeline Inventory Update** Staff conducts an update to the emissions inventory every two years starting with the year 2018, consistent with SANDAG's Regional Framework timeline.
2025	**CAP Update** Based on findings from the annual monitoring reports and inventory updates, staff prepares a CAP update every five years. Beginning in 2025 the CAP update is conducted in coordination with the County's Strategic Plan, General Management System, and Capital Improvement Program five-year review cycles.

Figure 5.1 CAP Monitoring and Update Schedule

CEQA Tiering/Streamlining

Implementation of the CAP will require that new development projects attain higher levels of energy efficiency and incorporate more sustainable design standards. New development projects that are consistent with the land use projections and GHG reduction measures in the CAP are eligible for California Environmental Quality Act (CEQA) streamlining, per the provisions of CEQA Guidelines Section 15183.5. General Plan Amendment projects that propose increased densities/intensities beyond that allowed by the General Plan will not be able to use the CAP streamlining provision.

The "qualified" County CAP will allow project-specific environmental documents, if eligible, to tier from and/or incorporate by reference the CAP's programmatic review of GHG impacts in their cumulative impact analysis. The CAP meets the requirements under Section 15183.5 of the CEQA Guidelines as a qualified plan for the reduction of GHG emissions for use in cumulative impact analysis pertaining to development projects. Details on how projects can demonstrate consistency with the CAP are provided in a separate *Guidelines for Determining Significance for Climate Change* document (Guidelines).

The Guidelines will be used as part of the environmental review process to evaluate GHG emissions from individual discretionary projects.

The Guidelines incorporate the following "threshold of significance":

A proposed project would have a less than significant cumulatively considerable contribution to climate change impacts if it is found to be consistent with the County's Climate Action Plan; and, would normally have a cumulatively considerable contribution to climate change impacts if it is found to be inconsistent with the County's Climate Action Plan.

If a project can show consistency with the land use projections and applicable GHG reduction measures in the CAP, the level of environmental review for the project required under CEQA with respect to GHG emissions can be streamlined.

Upon adoption, this will constitute the threshold of significance for general use as part of the County's environmental review process. Consistency with the CAP is determined through the *CAP Consistency Review Checklist* (Checklist), which is provided as Appendix A to the Guidelines. The Checklist, in conjunction with the CAP, provides a streamlined CEQA review process for proposed discretionary development projects.

The Checklist is the mechanism that is used to demonstrate consistency with the CAP and contains GHG reduction measures applicable to development projects that are required to be implemented on a project-by-project basis to ensure that the specified emission targets identified in the CAP are achieved. New development projects will need to incorporate all applicable CAP measures and supporting efforts to demonstrate consistency with the CAP. These measures will be enforced as conditions of approval for
ensuring that compliance be confirmed before the project can be implemented.
This CAP has been prepared to be consistent with CEQA

The CAP is a plan for the reduction of GHG emissions in accordance with CEQA Guidelines Section 15183.5 as well as with CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b). A project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP.

Guidelines Section 15183.5 and includes the following components:

- A quantified inventory of GHG emissions, both existing and projected over buildout of the General Plan, resulting from development within the unincorporated county (Chapter 2: Baseline Inventory section);
- A level of emissions, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the General Plan would not be cumulatively considerable (Chapter 2: Reduction Targets section);
- Identification and analysis of GHG emissions anticipated because of development pursuant to the General Plan, as amended (Chapter 2: Emissions Projections section);
- Specific measures or a group of measures, including all feasible GHG reduction actions and performance standards, that will be implemented on a project-by-project basis in the county (Chapter 3: Detailed Strategies, Measures, and Supporting Efforts section);
- An analysis of whether the identified feasible measures would collectively achieve the specified emissions level and reduction targets (Chapter 3: Table 3.1 GHG Reductions by Category from Proposed Reduction Strategies and Measures and Appendix C);
- A mechanism to monitor the CAP's progress toward achieving the level and to require amendment if the CAP is not achieving specified levels (Chapter 5: Monitoring and Updates); and
- Adoption in a public process following environmental review.

The County has prepared a Supplemental Environmental Impact Report (SEIR) to assess the environmental effects

of the CAP and to meet the requirements of preparing a qualified CAP for CEQA streamlining.

Use of the streamlining provisions of the CAP is anticipated to significantly reduce the level of effort in assessing GHG emissions from new development on a project-by-project basis. The CAP provides a programmatic analysis of GHG emissions in the unincorporated areas and establishes a comprehensive set of strategies and measures the County can use to reduce GHG emissions, both from new development and existing land uses. All CAP measures applicable to new development are included in the Checklist. Individual projects would be required to use the Checklist to demonstrate consistency with these measures.

CEQA Guidelines Section 15183.5 requires that an environmental document that relies on a qualified CAP for a cumulative impacts analysis must identify those requirements specified in the CAP that apply to the project and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project. The Checklist will serve to specify the requirements for individual projects and will be conditioned to ensure incorporation and implementation of CAP measures. Therefore, the Guidelines and Checklist will ensure that reductions are achieved on a project-by- project basis.

TABLE 5.1 CAP Monitoring Program

Measure Number	Measure Title & Action(s)	Outcome(s)	Enforcement	Responsibility		Implementation Time Frame	Relative Cost	Potential Funding Source						
				Lead	Support			County	Utilities	GHGRF	State/ MPO	Federal	Private	Loans
Built Environment and Transportation Category														
T-1.1	Acquire Open Space Conservation Land													
	• Implement the South County MSCP and future North and East County MSCP	Program implementation	County Initiative	DPR	PDS	Ongoing	Low	X			X	X		
	• Acquire 2,622 acres of open space conservation lands	2,622 acres of open space conservation lands acquired (equates to offsetting 184 dwelling units)	County Initiative	DPR		2015-2020	Medium	X			X	X		
	• Acquire 437 acres of open space conservation lands per year	4,370 acres of open space conservation lands acquired (equates to offsetting 307 dwelling units)	County Initiative	DPR		2021-2030	Medium	X			X	X		
T-1.2	Acquire Agricultural Easements													
	• Expand the eligibility criteria for the PACE Program	Program expansion	County Initiative	PDS		2020	Low	X						
	• Acquire 443 acres of agricultural easements	443 acres of agricultural easements acquired (equates to off-setting 18 dwelling units)	County Initiative	PDS	DGS	2020	Medium	X						
	• Acquire 443 acres of agricultural easements per year	4,430 acres of agricultural easements acquired (equates to off-setting 180 dwelling units)	County Initiative	PDS	DGS	2021-2030	Medium	X						
T-1.3	Update Community Plans													
	• Update 10 community plans that include villages	10 community plan updates completed	County Initiative	PDS		2030	Medium	X						
	• Update 9 community plans that include villages	9 community plan updates completed	County Initiative	PDS		2031-2040	Medium	X						
T-2.1	Improve Roadway Segments as Multi-modal													
	• Improve 700 centerline miles of roadway segments, including 250 intersections and 210 lane miles of bikeway improvements	700 centerline miles improved, including 250 intersections and 210 lane miles of bikeways	County Initiative	DPW		2030	High	X			X	X		
	• Improve 500 centerline miles of roadway segments, including 250 intersections and 210 lane miles of bikeway improvements	500 centerline miles improved, including 250 intersections and 210 lane miles of bikeways	County Initiative	DPW		2031-2050	High	X			X	X		
T-2.2	Reduce New Non-residential Development Vehicle Miles Traveled													
	• Amend the San Diego County Code of Regulatory Ordinances to include a Transportation Demand Management (TDM) Ordinance	New non-residential commute VMT reduced by 15% by 2030	Requirement	PDS		2020	Low	X					X	
T-2.3	Reduce County Employee Vehicle Miles Traveled													

Measure Number	Measure Title & Action(s)	Outcome(s)	Enforcement	Responsibility		Implementation Time Frame	Relative Cost	Potential Funding Source						
				Lead	Support			County	Utilities	GHGRF	State/ MPO	Federal	Private	Loans
	• Conduct additional outreach to increase participation in the County's vanpool, carpool, and transit pass subsidy programs, and the GWOW Program	County employee commute VMT reduced by 20% below 2014 levels	County Initiative	DHR	DGS	2030	Medium	X			X			
T-2.4	Shared and Reduced Parking in New Non-residential Development													
	• Amend the San Diego County Zoning Ordinance	New non-residential commute VMT reduced by 10% by 2030	Requirement	PDS		2020	Low	X					X	
T-3.1	Use Alternative Fuels in New Residential and Non-residential Construction Projects													
	• Amend Title 8 of the San Diego County Code of Regulatory Ordinances	10% of construction equipment in-use during new residential and non-residential construction in the unincorporated county utilize alternative fuels by 2030	Requirement	PDS		2020	Low	X					X	
T-3.2	Use Alternative Fuels in County-initiated Projects													
	• Implement the 2016 Green Fleet Action Plan Implementation Strategy	Plan implementation	County Initiative	DGS		2020	Low	X						
	• Amend Board of Supervisors Policy Number G-15 (Design Standards for County Facilities and Property)	100% of construction equipment in-use during construction of County-initiated projects utilize alternative fuels by 2030	County Initiative	DGS		2020	Low	X						
T-3.3	Develop a Local Vehicle Retirement Program													
	• Develop a local vehicle retirement program	Program development	Incentive	SDAPCD		2020	Low	X			X	X	X	
	• Retire 800 late-model vehicles (model year 1996 or older)	800 late-model vehicles (model year 1996 or older) retired	Incentive	SDAPCD		2030	Medium	X			X	X	X	
T-3.4	Reduce the County's Fleet Emissions													
	• Implement the County's Strategic Energy Plan and the Green Fleet Action Plan Implementation Strategy	County fleet GHG emissions reduced by 10%	County Initiative	DGS		2015-2020	Medium	X						
	• Update the County's Strategic Energy Plan and the Green Fleet Action Plan Implementation Strategy	County fleet GHG emissions reduced by 20% by 2030	County Initiative	DGS		2020	Low	X						
T-4.1	Establish a Direct Investment Program													
	• Establish a local carbon offset program	Program development	County Initiative	SDAPCD		2020	Low	X						
	• Fund, implement, register, and verify direct investment projects	190,262 $MTCO_2e$ in carbon credits verified and retired	County Initiative	SDAPCD	PDS	2021-2030	High	X						
Energy Category														
E-1.1	Improve Building Energy Efficiency in New Development													

Measure Number	Measure Title & Action(s)	Outcome(s)	Enforcement	Responsibility		Implementation Time Frame	Relative Cost	Potential Funding Source						
				Lead	Support			County	Utilities	GHGRF	State/ MPO	Federal	Private	Loans
	• Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes) to achieve a 10% greater building energy efficiency in all new non-residential development than required by the 2016 State Energy Code (Title 24 Part 6)	All new non-residential development achieves 10% greater building energy efficiency than required by the 2016 State Energy Code (Title 24 part 6)	Requirement	PDS		2020	Low	X					X	
	• Amend the County Construction Codes to require all new residential development to meet the State's Zero Net Energy (ZNE) standards	All new residential development meets the State's ZNE standards	Requirement	PDS		2020	Low	X					X	
	• Amend the County Construction Codes to require all new non-residential development to meet the State's ZNE standards	All new non-residential development meets the State's ZNE standards	Requirement	PDS		2030	Low	X					X	
E-1.2	Use Alternatively-powered Water Heaters in Residential Development													
	• Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes)	All new and replacement water heaters in residential development are solar, electric or tankless natural gas	Requirement	PDS		2020	Low	X					X	
E-1.3	Improve Building Energy Efficiency in Existing Development													
	• Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes) to require an energy efficient audit prior to building permit issuance for remodels/renovations	1% of the existing building stock in the unincorporated county has implemented the energy efficiency improvements recommended by an energy efficiency audit by 2030	Requirement and Incentive	PDS		2020	Low	X					X	
	• Amend Title 9 of the San Diego County Code of Regulatory Ordinances to require a building energy efficiency disclosure for real estate transactions at the point of sale (disclosure only)	Disclosure development	Requirement and Incentive	PDS		2020	Low	X					X	
E-1. 4	Reduce Energy Use Intensity at County Facilities													
	• Implement the County's Strategic Energy Plan (SEP) to achieve a 10% reduction in energy use intensity at County facilities below 2014 levels	Energy use intensity at County facilities is reduced by 10% below 2014 levels	County Initiative	DGS		2020	Medium	X	X		X			
	• Update the County's SEP to incorporate a 15% reduction in energy use intensity at County facilities below 2014 levels	Energy use intensity at County facilities is reduced by 15% below 2014 levels by 2030	County Initiative	DGS		2020	Low	X	X		X			
E-2.1	Increase Renewable Electricity													
	• Establish a Renewable Energy Program	Electricity from renewable sources accounts for 90% of the unincorporated county's electricity consumption by 2030	County Initiative	DGS	PDS	2025	High	X	X				X	X

Measure Number	Measure Title & Action(s)	Outcome(s)	Enforcement	Responsibility		Implementation Time Frame	Relative Cost	Potential Funding Source						
				Lead	Support			County	Utilities	GHGRF	State/ MPO	Federal	Private	Loans
E-2.2	Increase Renewable Electricity in Non-residential Development													
	• Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes) and the County's Zoning Ordinance	Renewable electricity systems (e.g., solar photovoltaics, wind) installed on all new non-residential development, offsetting 100% of the electricity consumed	Requirement	PDS		2020	Low	X	X		X	X	X	
E-2.3	Install Solar Photovoltaics in Existing Homes													
	• Continue the online solar PV permitting, County innovation initiatives, and the Solar and EV Ready Ordinance	52,273 existing homes with PV electrical systems	Incentive	PDS		2020	Low	X	X		X	X	X	
	• Continue the online solar PV permitting, County innovation initiatives, and the Solar and EV Ready Ordinance	77,902 existing homes with PV electrical systems	Incentive	PDS		2021-2030	Low	X	X		X	X	X	
E-2.4	Increase Use of Renewable Electricity for County Operations													
	• Develop County renewable electricity projects through Power Purchase Agreements	10% of the County's operational electricity generated with renewables	County Initiative	DGS		2020	Medium	X	X					
	• Develop County renewable electricity projects through Power Purchase Agreements	20% of the County's operational electricity generated with renewables	County Initiative	DGS		2030	Medium	X	X					
Solid Waste Category														
SW-1.1	Increase Solid Waste Diversion													
	• Implement the County's Strategic Plan to Reduce Waste and increase solid waste diversion	75% of the unincorporated county's solid waste is diverted from landfills	County Initiative	DPW	DGS, PDS, DEH & DPC	2030	High	X			X	X	X	
Water and Wastewater Category														
W-1.1	Increase Water Efficiency in New Residential Development													
	• Amend Title 9 of the San Diego County Code of Regulatory Ordinances (County Construction Codes)	Water-efficient appliances and plumbing fixtures installed in all new residential development pursuant to Tier 1 of the California Green Building Standards Code (CALGreen)	Requirement	PDS		2020	Low	X					X	
W-1.2	Reduce Outdoor Water Use													
	• Amend Title 8 of the San Diego County Code of Regulatory Ordinances (Water Conservation in Landscaping)	40% reduction in outdoor water use for landscaping in new and existing residential and non-residential development	Requirement	PDS		2020	Low	X					X	
W-1.3	Reduce Potable Water Consumption at County Facilities													

Measure Number	Measure Title & Action(s)	Outcome(s)	Enforcement	Responsibility		Implementation Time Frame	Relative Cost	Potential Funding Source						
				Lead	Support			County	Utilities	GHGRF	State/ MPO	Federal	Private	Loans
	• Implement the County's Strategic Energy Plan (SEP)	15% reduction in potable water consumption at County facilities below 2014 levels	County Initiative	DGS		2020	Medium	X	X					
	• Implement the County's Strategic Energy Plan (SEP)	20% reduction in potable water consumption at County facilities below 2014 levels	County Initiative	DGS		2030	Medium	X	X					
W-2.1	Increase Rain Barrel Installations													
	• Increase participation in the Metropolitan Water District of Southern California's rain barrel rebate program through outreach, education, and marketing	1,200 rain barrels installed	Incentive	DPW		2020	Low		X				X	
	• Increase participation in the Metropolitan Water District of Southern California's rain barrel rebate program through outreach, education, and marketing	2,000 rain barrels installed	Incentive	DPW		2021-2030	Low		X				X	
Agriculture and Conservation Category														
A-1.1	Convert Farm Equipment to Electric													
	• Convert farm equipment to electric through San Diego County Air Pollution Control District financial incentives	8% of farm equipment converted to electric	Incentive	SDAPCD		2030	Medium	X			X			
A-1.2	Convert Stationary Irrigation Pumps to Electric													
	• Convert stationary petroleum-diesel or gas-powered irrigation pumps to electric through San Diego County Air Pollution Control District financial incentives	Four stationary irrigation pumps converted to electric	Incentive	SDAPCD		2020	Medium	X			X			
	• Convert stationary petroleum-diesel or gas-powered irrigation pumps to electric through San Diego County Air Pollution Control District financial incentives	40 stationary irrigation pumps converted to electric	Incentive	SDAPCD		2021-2030	Medium	X			X			
A-2.1	Increase Residential Tree Planting													
	• Amend Title 8 of the San Diego County Code of Regulatory Ordinances (Water Conservation in Landscaping Ordinance)	35,146 trees planted through new residential development	Requirement	PDS		2030	Low	X					X	
	• Amend Title 8 of the San Diego County Code of Regulatory Ordinances (Water Conservation in Landscaping Ordinance)	28,202 trees planted through new residential development	Requirement	PDS		2031-2050	Low	X					X	
A-2.2	Increase County Tree Planting													
	• Plant 3,500 trees annually	49,000 trees planted in the unincorporated county	County Initiative	DPR		2017-2030	Medium	X						
	• Plant 3,500 trees annually	70,000 trees planted in the unincorporated county	County Initiative	DPR		2031-2050	Medium	X						
	• Adopt a Tree Planting Program	Program development	County Initiative	DPR	PDS	2020	Low	X						

Measure Number	Measure Title & Action(s)	Outcome(s)	Enforcement	Responsibility		Implementation Time Frame	Relative Cost	Potential Funding Source						
				Lead	Support			County	Utilities	GHGRF	State/ MPO	Federal	Private	Loans
	• Conduct a Tree Canopy Assessment	Plan implementation	County Initiative	DPR	PDS	2025	Low	X						

NOTE

This document is a quick reference to track the Climate Action Plan (CAP) greenhouse gas reduction measures, their outcomes, enforcement, responsible party, implementation time frames, relative cost, and possible funding sources, and should not be confused with the separate mitigation and monitoring reporting program (MMRP) adopted as part of the CAP Final Supplemental Environmental Impact Report (EIR) required by CEQA. This CAP Monitoring Program is intended to ensure that all CAP greenhouse gas reduction measures are effective and enforceable, and that the responsible party will undertake their implementation. The CAP Final Supplemental EIR MMRP will set forth the measures required to mitigate the significant impacts from implementation of the GHG reduction measures in the CAP.

Enforcement

County Initiative = Actions for which the County is responsible for measure funding, development, and implementing.
Requirement = Actions required by the Board of Supervisors through codes, ordinances, policies or other mechanisms to ensure measure implementation.
Incentive = Actions implemented by participating in incentive-based activities or programs for which the County or other entities will provide a funding mechanism for measure implementation.

Responsibility (County departments responsible for measure implementation)

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 = Department of Planning & Development Services
SDAPCD = San Diego County Air Pollution Control District

Acronyms

CEQA = California Environmental Quality Act
EV = Electrical Vehicle
GWOW = Government Without Walls
GHG = Greenhouse Gas
GHGRF = Greenhouse Gas Reduction Fund
MPO = Metropolitan Planning Organization
MSCP = Multiple Species Conservation Program
PACE = Purchase of Agriculture Conservation Easement
PV = Photovoltaic
SEP = Strategic Energy Plan
TDM = Transportation Demand Management
VMT = Vehicle Miles Traveled
ZNE = Zero Net Energy

TABLE 5.2 Potential Funding Sources to Support Greenhouse Gas Reduction Measures

Funding Category	Funding Source or Program	Description
County Funds	General Fund	Provides funding for the County's primary operating accounts except those required to be accounted for in another fund.
	Special Revenue Funds	Provides legally restricted funding for specified purposes (other than for major capital projects) (e.g., roads, library, asset forfeiture, and Proposition 172 funds).
	Capital Project Funds	Provides funding for the acquisition or construction of major capital facilities (other than those financed by proprietary funds and trust funds).
	New Development Impact Fees	Provides funding for proposed programs and projects that offset new development impacts or provide additional services to new development.
Utility Funds	Go Solar Initiative (San Diego Gas & Electric)	Provides a variety of rebates for existing and new homes for projects such as solar photovoltaics, lighting, refrigeration, heating and ventilation, thermal technologies, and solar hot water projects. Single-family homes, commercial development, and affordable housing are eligible. Offers on-Bill Financing (OBF), a no-interest loan that is paid back through the monthly utility bill. SDG&E is one of the utilities participating in the Go Solar initiative.
	Community Choice Energy (CCE) Revenue	If implemented by a local public partnership or through the County, a local CCE program would generate revenue that may be used to fund or incentivize GHG reduction measures.
State GHG Reduction Funds	Affordable Housing and Sustainable Communities (AHSC) Program	Distributes California Greenhouse Gas Reduction Fund (GGRF) funds to disadvantaged communities. Eligible projects include providing affordable housing, transit-oriented development (TOD), transit, complete streets, and active transportation projects that reduce GHG emissions and vehicle miles traveled.
	Sustainable Agricultural Lands Conservation (SALC) Program	Provides funding to protect at-risk agricultural lands from conversion to more GHG-intensive land uses, such as urban or rural residential development. This program intends to promote growth within jurisdictions, ensure open space remains available, and support a healthy agricultural economy and resulting food security.

Funding Category	Funding Source or Program	Description
State GHG Reduction Funds	California Community Services and Development (CSD) Department	Provides funding for energy efficiency and renewable energy projects for single- and multi-family low-income housing units with disadvantaged communities.
	California Department of Food and Agriculture (CDFA) Dairy Digester Research and Development Program (DDRDP)	Provides financial assistance for the installation of dairy digesters in California, which will reduce GHG emissions.
	CDFA's State Water Efficiency and Enhancement Program	Provides grants to implement irrigation systems that reduce GHGs and save water on California agricultural operations.
	California Department of Resources Recycling and Recovery (CalRecycle) GHG reduction Grant and Loan Program	Provides financial incentives for capital investments to composting/digestion infrastructure and recycling manufacturing facilities that will result in reduced GHG emissions.
	California Natural Resources Agency (CNRA) Urban Greening Grant Program	Funds projects that reduce GHGs by sequestering carbon, decreasing energy consumption and reducing vehicle miles traveled, while establishing and enhancing parks and open space, using natural solutions to improve air and water quality and reducing energy consumption, and creating more walkable and bike-able trails.
Other State and MPO Funds	California Air Resources Board (CARB) Programs	CARB offers several grants, incentives, and credit programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program. The following programs can be used to fund local measures: • Air Quality Improvement Program (Assembly Bill [AB] 118) • Loan Incentives Program • California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project • Clean Vehicle Rebate Project • Low Carbon Transportation Program

Funding Category	Funding Source or Program	Description
Other State and MPO Funds	California Department of Transportation (Caltrans) Programs	Caltrans offers several programs and grants supporting sustainable transportation initiative, including: • Low Carbon Transit Operations • Active Transportation Program • Active Transportation Grant Program • Transit and Intercity Rail Capital Program • Strategic Partnership Grants • Sustainable Transportation Planning Grant
	San Diego Association of Governments (SANDAG) Programs	SANDAG offers programs and grants supporting sustainable transportation initiative, including: • Smart Growth Incentive Program • TransNet Smart Growth Incentive and Active Transportation Grant Programs
	California Energy Commission (CEC) and California Public Utilities Commission (CPUC) Programs	CEC and CPUC offer a variety of programs and grants, including: • Multi-Family Affordable Housing Solar Roofs Program (CPUC) • Local Government Challenge Program (CEC) ○ Retrofits California's existing residential, commercial, and public buildings to become high-performing and energy-efficient • Electric Program Investment Challenge (EPIC) Program. (CPUC) (Funds clean energy research, demonstration and deployment projects that support energy policy goals and promote greater electricity reliability, lower costs, and increased safety.) • Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP) (CEC) (Funds gaps in the energy innovation pipeline for the development and deployment of alternative and renewable fuels and advanced transportation technologies.)

Funding Category	Funding Source or Program	Description
Other State and MPO Funds		• Energy Upgrade California Program. (CEC and CPUC, administered by utilities) ○ Funds for energy upgrade rebates, financing, and other incentives.
	Proposition 1: State Coastal Conservancy Grant	Provides funds for multi-benefit ecosystem and watershed protection and restoration projects.
	Proposition 39: California Clean Energy Jobs Act Grants	Funds energy efficiency and clean energy projects at eligible local educational agencies — including county offices of education, school districts, charter schools and state special schools.
	Transformative Climate Communities (TCC) Program	Provides assistance to disadvantaged communities to locate affordable housing near transit and increase energy savings and clean transportation, per AB 2722 (September 2016)
	California Department of Food and Agriculture's Healthy Soils Program	Provides incentives to farmers and ranchers to enhance buildup of soil carbon on agricultural lands.
	California Department of Forestry and Fire Protection's (CalFire's) Urban and Community Forestry Program	Supports several urban tree planting projects, including jurisdiction wide tree inventory and urban forest mapping, analysis, and long-term management planning; urban wood and biomass utilization projects; and projects to assist local entities purchase and improve unused lots; and projects for urban green infrastructure.

Funding Category	Funding Source or Program	Description

	Strategic Growth Council (SGC) and State Department of Conservation (DOC) Programs	The Strategic Growth Council (SGC) and the State Department of Conservation (DOC) provide grants to fund sustainable community planning, natural resource conservation, and development and adoption. These include:
		• Sustainable Communities Planning Grant and Incentives Program. (SGC)
		  ○ Supports local land use planning related to climate and the State's statutory planning opportunities. These grants will support the development and/or implementation of a specific portion of a land use plan, land protection or management practice, or development project (e.g., Climate Action or Adaptation Plans, GHG inventories).
		• Resource Conservation District Assistance Program
		  ○ Provides assistance to local resource conservation districts to educate landowners and the public about resource conservation.

Federal Funds	Federal Transit Administration (FTA) Programs	FTA has a variety of available grants and programs available for transit agencies and local governments including: • Job Access and Reverse Commute and New Freedom Programs • Buses and Bus Grants Program • Formula Grants for Rural Areas
	Partnership for Sustainable Communities	A multi-agency partnership between U.S. Department of Housing and Urban Development, U.S. Department of Transportation, and the U.S. Environmental Protection Agency that offers grant funding to help build more viable, walkable, and environmentally sustainable communities.
	Federal Income Tax Credits for Energy Efficiency	Provides tax credits for energy efficiency upgrades for homes.

Funding Category	Funding Source or Program	Description
Private Funds	Climate Program Grants	Funds development and implementation of local government action plans and climate preparedness. Funds provided by the San Diego Foundation Climate program.
	Private Funding	Private equity can be used to finance energy improvements, with returns realized as future cost savings.
	Private Funding Peer-to-Peer (P2P) Lending/Crowdfunding	• Net energy cost savings from improved energy efficiency can fund retrofits in households. • Power Purchase Agreements (PPAs) involve a private company that purchases, installs, and maintains a renewable energy technology through a contract that typically lasts 15-25 years. After the contract period, the company would uninstall the technology or sign a new contract. • Crowdfunding and P2P lending organizations offer easy, efficient, and low-cost sources for capital investments, loan repayment, and project funding.
Loan Programs	Municipal Bonds	There are two basic types of municipal bonds: General Obligation Bonds and Revenue Bonds. • General Obligation Bonds often require voter assent and tend to have lower interest rates than Revenue Bonds. • With Revenue Bonds, the principal and interest is secured by revenues derived from tolls, charges, or rents from the facility built with the proceeds of the bond issuance.
	Property-Assessed Clean Energy (PACE)	Under AB 811, the State's PACE finance program is intended to finance energy and water improvements within a home or business through a land-secured loan, and funds are repaid through property assessments. This program is administered by a variety of private entities including CaliforniaFIRST, HERO PACE Program, and Ygrene Energy Fund.

Funding Category	Funding Source or Program	Description
Loan Programs		Municipalities are authorized to designate areas where property owners can enter contractual assessments to receive long-term, low-interest loans for energy and water efficiency improvements, and renewable energy installation on their property.
	Federal Housing Administration's Energy Efficient Mortgages (EEM) Program	Credits a home's energy efficiency features in the mortgage itself. To verify a home's energy efficiency, an EEM typically requires a home energy rating of the house by a home energy rater before financing is approved. EEMs typically are used to purchase a new home that is already energy efficient, such as an ENERGY STAR® qualified home.
	Department of Energy's (DOE) Qualified Energy Conservation Bonds (QECBs)	Enables qualified State, tribal, and local government issuers to borrow money at attractive rates to fund energy conservation projects. QECBs are taxable bonds, but QECBs are issued as direct subsidy bonds and are among the lowest-cost public financing tool.
	DOE's Clean Renewable Energy Bonds (CREBs)	Finances public renewable energy projects. The bondholder receives federal tax credits in lieu of a portion of the traditional bond interest, resulting in lower effective interest rates for the borrower.



6

PUBLIC OUTREACH AND ENGAGEMENT

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Outreach Summary

Public Outreach and Engagement Plan

Public outreach and stakeholder engagement are essential components in the preparation of a successful Climate Action Plan (CAP). In recognition of the importance of public participation in the planning process, the County's Department of Planning & Development Services (PDS) developed a Public Outreach and Engagement Plan (Outreach Plan; provided as Appendix E) to establish specific opportunities for the public to collaborate with staff on key strategies to achieve greenhouse gas (GHG) reduction targets and reduce the effects of the changing climate in their local communities. The Outreach Plan was released in March 2016, and summarized how the County will comprehensively engage the public and other interested parties in the preparation of the CAP and associated Draft Supplemental Environmental Impact Report (SEIR). The purpose of the County's outreach strategy has been fivefold: (1) to raise awareness of the CAP; (2) educate the public and other stakeholders about climate planning, so they can participate effectively in the project; (3) provide opportunities for input at the various steps of CAP development; (4) engage stakeholders during the decision-making process; and (5) provide an open, public process in compliance with the California Environmental Quality Act.

The Outreach Plan for the CAP was granted the "Outstanding Public Involvement" award at the Association of Environmental Professionals (AEP) San Diego Chapter Awards and Scholarship Banquet on October 6, 2016. This recognition illustrates the county's commitment to collaborating with regional partners, stakeholders, and members of the community throughout the climate planning process.



The Public Outreach and Engagement Plan was awarded the "Outstanding Public Involvement" award at the 2016 AEP San Diego Chapter Awards.

Internal Stakeholder Engagement

To engage stakeholders internal to the County, an "Internal Working Group" comprised of the following 11 County departments was convened to bring knowledge and resources together during development of the CAP:

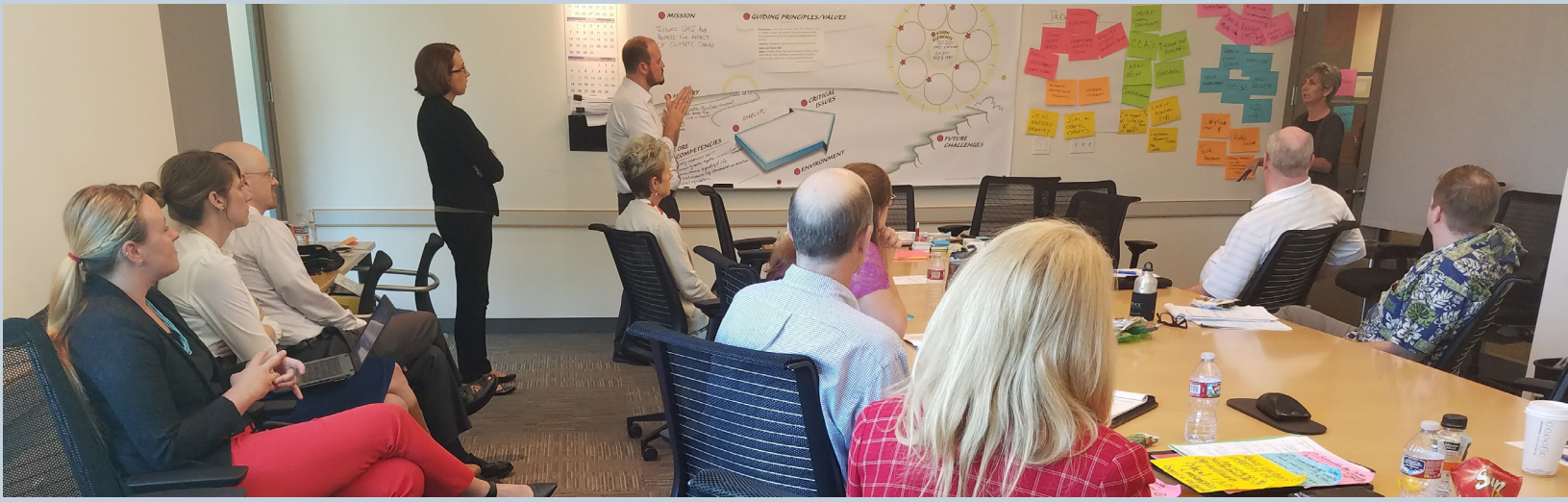
- Agriculture, Weights & Measures;
- Environmental Health;
- General Services;
- Health & Human Services Agency-Public Health Services Department;
- Human Resources;
- Office of Emergency Services;
- Office of the County Counsel;
- Parks & Recreation;
- Planning & Development Services;
- Public Works; and
- Air Pollution Control District.

The Internal Working Group continues to meet on a monthly basis to discuss climate planning best management practices and to coordinate review of the draft CAP. In February 2017, the San Diego County Board of Supervisors (Board) transitioned this Internal Working Group into a Sustainability Task Force to implement energy efficiency, renewable energy, and sustainability plans, policies, and programs. Upon adoption of the CAP, the Sustainability Task Force will oversee implementation of the CAP.

External Stakeholder Engagement

The robust Public Outreach and Engagement Plan (Outreach Plan) the County has committed to implementing during development of the CAP and Draft SEIR is in large part driven by existing and growing, public interest in climate action planning in the county and the state more broadly. Local residents and business owners have expressed this interest by actively participating in the public process.

The Outreach Plan established a framework of stakeholder meetings and community events to engage diverse audiences, synchronized with key project milestones. Since publication of the Outreach Plan on the CAP project website, PDS staff has collaborated with over 50 stakeholder groups in the environmental, business,



The County's Sustainability Task Force continues to meet on a monthly basis to discuss climate planning best management practices.



County staff participated in over 100 different community events across the county to raise awareness about the CAP process and gather input from members of the public.

and community sectors, during a total of over 100 public events. The form and function of each event was uniquely tailored to ensure widespread community awareness, education, and participation, as well as to elicit specific technical feedback.

Public engagement was designed to align with the early stages of the CAP and Draft SEIR process, including through plan development. PDS staff and the consultant team, in partnership with representatives from several County departments including the Department of Parks and Recreation, Department of Public Works, Health and Human Services Agency-Public Health Services Department, and the San Diego County Air Pollution Control District (SDAPCD), participated in over 100 different community events across the county to raise awareness about the CAP process and gather input from members of the public unable to attend formal meetings or who were unaware of the project. Another ongoing strategy woven into the outreach process has been county staff attendance at seven different stakeholder group events, including North County Climate Change Alliance, San Diego Environment & Design Council, San Diego County Taxpayers Association, Building Industry Association, Building Owners and Managers Association, NAIOP (Commercial Real Estate Development Association), and San Diego Regional Chamber of Commerce meetings.

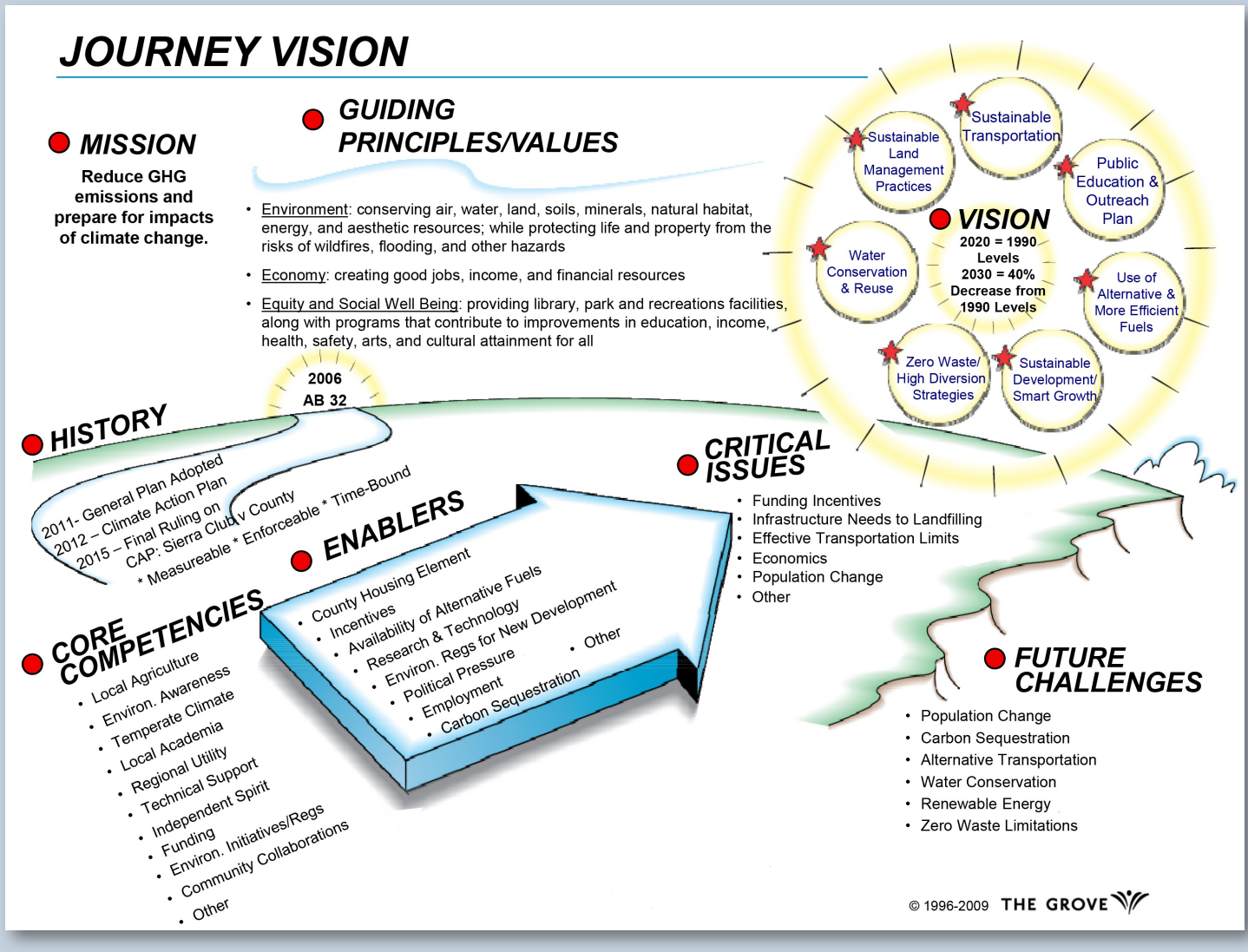
Following significant early milestones in the CAP project, the county hosted stakeholder meetings with over 20 external stakeholder groups during summer 2016, including environmental nonprofits, representatives from academia, business groups, and climate planning professionals, to understand the climate planning priorities of each industry. These meetings provided smaller venues for focused discussions of CAP development.

Following the stakeholder meetings, the County in collaboration with the consultant team hosted four

focused "visioning sessions" with representatives from over 50 stakeholder groups, including the chairs of the County's planning and sponsor groups, to collaborate on the context and vision for the CAP. These sessions provided an opportunity for stakeholder groups to aid in the development of the mission, vision, goals, and objectives for the CAP, and to identify potential GHG reduction strategies and measures.

Over 50 individual stakeholders participated in two public workshops held in fall 2016. The workshops served to inform the public on input provided during the stakeholder meetings and visioning sessions, to educate the public on technical information related to the CAP, and to provide another opportunity for the community to provide feedback on potential GHG reduction strategies and measures. Public input from these workshops has guided development of the CAP to date.

Finally, in November 2016, the county hosted a Draft SEIR Scoping Meeting, which provided an opportunity for the public and interested parties to formally engage in the



The four focused "visioning sessions" conducted by the county informed the development of the mission, vision, goals, and guiding principles for the CAP.

environmental review process in compliance with CEQA.

Throughout the CAP development, staff has kept the San Diego County Planning Commission (Planning Commission) updated on the input received through the outreach efforts. Staff provided three informational presentations to the Planning Commission: the first in April 2016 to identify the scope of the CAP and share the Public Outreach and Engagement Plan; the second in November 2016 to inform on the input received during the public outreach and engagement and to share the preliminary GHG emissions inventory, projections, and reduction targets; and the third in June 2017 to share potential strategies and measures being considered for the CAP and identify additional public outreach opportunities and engagement with stakeholders. At all three informational sessions, the public was provided an opportunity to provide comment and share recommendations with the Planning Commission and staff.

The Outreach Plan included a broad range of media and communication methods to reach a wide audience, provide information, solicit participation and input, and allow for ongoing feedback and input. Outreach and engagement tools included:

- Project website for centralized information, email notification sign-up, project documents, and contact information to send comments and suggestions;
- Emails to stakeholder notification list at key milestones in the planning process;
- PDS eBlast, a publicly-circulated electronic newsletter, was used to share CAP process and outreach updates, as well as upcoming public participation events;
- CountyNewsCenter website posted press and media releases for upcoming outreach events; and
- SDAPCD used its Twitter account to share CAP public outreach events, opportunities, and updates.

Regional Collaboration

In addition to stakeholder engagement with local groups in the county, the Outreach Plan emphasized the importance of collaborating with regional partners to share best practices in climate planning and establish partnerships for future implementation. County staff met with the 21st Conference of the Parties participants in April 2016, which included 15 scientists and students from the University of California, San Diego, to discuss the latest series of negotiations held annually under the United Nations Framework Convention on Climate Change. In May 2016, the County's Internal Working Group met with San Diego Gas & Electric (SDG&E) to explore energy-related best practices and SDG&E energy efficiency programs. The County also held two public workshops in September 2016 for the public, public agencies, business organizations, environmental groups, community groups, and other interested parties to contribute comments on the County's potential GHG reduction strategies and measures.

In addition to the specific events described above, the County has formed successful partnerships with local governments, public agencies, private industry, and nonprofit organizations.



Regional partnerships will be essential for successful implementation of the CAP.

Some regional partners include:

- The County's collaboration with the San Diego Association of Governments (SANDAG) Energy Working Group, which identifies issues related to the coordination and implementation of the Regional Energy Strategy, including measures to reduce energy consumption and GHG emissions related to electricity, natural gas, and transportation.
- The County's Local Government Partnership with SDG&E Energy Initiatives Partnership aims to inform, educate, and implement energy efficiency practices to county's employees, businesses, residents, and other entities within the county.
- The San Diego Regional Energy Partnership, funded by the California Public Utilities Commission and administered by SDG&E, promotes community-based energy efficiency and sustainability initiatives in the region.
- The San Diego Regional Climate Collaborative is a regional forum for agencies and organizations to share expertise, leverage resources, and advance comprehensive solutions to facilitate climate action planning in the San Diego region.
- The San Diego Regional Clean Cities Coalition is a network of community-based volunteers that develop public and private partnerships to achieve cleaner communities through increased use of alternative fuels and alternative fuel vehicles.

Continuation of these regional partnerships will be essential for successful implementation of the CAP. The partnerships provide opportunities for knowledge-sharing and collaboration in tackling the changing climate at the local level.

Ongoing Engagement and Education

Additional Opportunities for Public Input on the Draft CAP

The public input collected during implementation of the Outreach Plan has played a pivotal role in the identification of appropriate actions for reducing GHG emissions, and in the timely advancement of the CAP.

During the public review of the draft CAP, the County will host additional focused stakeholder engagement meetings, and two public informational meetings with the public and regional partners to communicate the content of the draft CAP and to provide an opportunity for the public to provide input. Feedback from these events will inform the final CAP, which will then enter a formal public review process, including public hearings by the Planning Commission and the Board.

Future and Ongoing Opportunities

Effective community engagement and education requires partnerships among government leaders, businesses, and individual community members. This section provides ideas and tools for the County, community, businesses, residents, and individuals to help achieve CAP objectives.

County

A significant component of the County's GHG reduction strategies is ongoing collaboration and outreach to provide education on sustainable behaviors, contribute to growing bodies of research on sustainability and climate science, and pilot implementation projects.

The County's Sustainability Task Force and elected officials provide the expertise and commitment to secure resources and accomplish CAP implementation goals.

Successful CAP implementation requires balancing the environment with economic and social equity needs, which together are referred to as the "Triple Bottom Line" of sustainability, and all are considered equally important. The County will continue to engage with stakeholders representative of the environmental community, business community, and residential community to ensure this balance is achieved. These collaboration and outreach efforts will be carried out by the County's Sustainability Task Force.

Community Members, Businesses, and Residents

Community members, businesses, and residents have the opportunity to become involved with their local government and regional agencies to support, advise, and inform implementation of CAP strategies and measures, including the development and implementation of plans, policies, ordinances, and codes. The local community is a vital resource for agencies in determining what actions are consistent with the values of and vision for the community, for removing barriers to implementation, and for generating innovative ideas to increase the rate of success. Participation in CAP implementation is open to all members of the public. Through the Sustainability Task Force, the County will provide outreach and education to the public about CAP implementation.

How to stay informed and get involved:

- Attend public meetings and workshops conducted by the County. Check the calendar on the project website to find out where and when meetings are held.
- Sign-up for informational emails regarding CAP implementation, or to be added to the County's stakeholder list to receive future notifications.

- Check the County website for items such as plans, ordinances, environmental review documents, and presentations that relate to sustainability and provide input on the content, either in-person or via email or letter to the Project Manager. (See County CAP website for contact details).

Community members, businesses, and residents can contribute to CAP implementation in multiple ways, including:

- Influencing the planning process;
- Tracking and attending public meetings in their community;
- Providing timely feedback; and
- Engaging other community members and businesses to increase participation.

Some agency meetings occur during business hours, which can make it difficult for certain individuals to attend in person. Individuals can send comments in a letter or email to the Project Manager ahead of the meeting (See County CAP website for contact details).

The Board meetings and Planning Commission hearings can be viewed live online through the following links:

- Board Meetings: http://www.sandiegocounty.gov/content/sdc/general/board-meeting-video.html
- Planning Commission Hearings: http://www.sandiegocounty.gov/content/sdc/pds/PC/sop/PCHearing_stream.html

In summary, successful CAP implementation is an outcome of the contribution and support of the local government, residents, businesses, and community members.



Community members, businesses, and residents can sign-up for emails and get more information about the CAP on the county's webpage.

The CAP includes tools to help the community protect the environment, secure a strong local economy, and have a healthier community. Coordinating, collaborating, and learning from each other will make for successful CAP implementation.

Resources:

- County of San Diego – Sign-up for emails and find more information regarding the CAP: http://www.sandiegocounty.gov/content/sdc/pds/advance/climateactionplan.html
- County of San Diego – Board of Supervisors Meeting Agendas: http://www.sandiegocounty.gov/content/sdc/cob/bosa.html
- County of San Diego – Planning Commission Meeting Agendas: http://www.sandiegocounty.gov/content/sdc/pds/PC/sop/PCHearing_stream.html
- County of San Diego – Communities and Advisory Groups: http://www.sandiegocounty.gov/content/sdc/pds/CommunityGroups/
- County of San Diego – Environmental Public Review: http://www.sandiegocounty.gov/content/sdc/pds/ceqa_public_review.html
- County of San Diego – County Ordinances, Policies, and Regulations Review: http://www.sandiegocounty.gov/content/sdc/pds/Public_Review_Non-CEQA.html
- SANDAG – committee meetings: http://www.sandag.org/index.asp?fuseaction=meetings.home

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GLOSSARY OF TERMS AND ACRONYMS AND REFERENCES

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GLOSSARY OF TERMS AND ACRONYMS

2011 GPU

The 2011 County of San Diego General Plan Update is a comprehensive and long-range plan providing a consistent framework for the future growth and development in the County of San Diego.

2011 GPU PEIR

The 2011 General Plan Update Final Program Environmental Impact Report was prepared pursuant to the California Environmental Quality Act informing governmental agencies and the public of the 2011 County of San Diego General Plan Update's environmental impacts.

°C

Degrees Celsius is a unit of measurement for temperature on the metric scale.

°F

Degrees Fahrenheit is a unit of measurement for temperature based on the scale proposed in 1724 by Amsterdam-based physicist Daniel Gabriel Fahrenheit. The scale is defined by two fixed points: the temperature at which water freezes into ice (32 °F) and the boiling point of water (212 °F).

AB

An Assembly Bill, pursuant to California law is proposed legislation that either originated or was modified in the California Assembly. To become law, an Assembly Bill must also be approved in the Senate and be signed by the Governor.

APG

The California Natural Resources Agency developed the Adaptation Planning Guide to provide guidance to support regional and local communities in proactively addressing the consequences of climate change.

AWM

The Department of Agriculture, Weights, and Measures, a County of San Diego Department to promote the agricultural community and support accurate product weight, measure, and price.

BAU

A Business-as-usual is a scenario that assumes that no additional greenhouse gas reduction efforts (e.g., regulations, climate action plans) beyond what have already been adopted by the state will occur.

Board

The County Board of Supervisors is the governing body of the County of San Diego addressing budget matters, policy issues, and intergovernmental, legislative matters, planning, and land use matters.

CAA

The federal Clean Air Act is a federal environmental law. The U.S. Supreme Court ruled that carbon dioxide is an air pollutant that can be regulated by the U.S. Environmental Protection Agency pursuant to the CAA.

CAFE

The Corporate Average Fuel Economy are federal fuel efficiency standards first enacted in 1975 to improve the average fuel economy of cars and light trucks produced for sale in the U.S.

CAL FIRE

The California Department of Forestry and Fire Protection is an emergency response and resource protection department that addresses emergencies of all types and protects and preserves timberlands, wildlands, and urban forests.

Cal OES

The California Office of Emergency Services is responsible for the coordination of State agency responses to disasters. Assuring the state's readiness to respond to, recover from all hazards, and assisting local governments in their emergency preparedness, response, recovery, and mitigation.

Cal-Adapt

Cal-Adapt is a climate adaptation planning tool, which assists local planning efforts by allowing users to identify potential climate change risks in specific geographic areas throughout California.

CalBRACE

The draft California Building Resilience Against Climate Effects is a five-step process that allows health officials to develop strategies and programs to help communities prepare for the health effects of climate change.

CalCAN

The California Climate and Agriculture Network is a statewide coalition that advances federal and state policy and brings a sustainable agricultural perspective to climate change and agriculture.

CalEPA

The California Environmental Protection Agency is a State agency with the mission of restoring, protecting, and enhancing the environment; and ensuring public health, environmental quality, and economic vitality.

CALGreen

California Green Building Standards Code, Title 24, Part 6 sets forth California's energy efficiency standards for residential and nonresidential buildings.

CAP

A Climate Action Plan is a plan that is prepared by an entity to reduce greenhouse gas emissions.

CAPCOA

The California Air Pollution Control Officers Association is an association of air pollution control officers that represents all 35-local air quality control agencies in California.

CARB

The California Air Resources Board is the agency in charge of air quality-and climate change-related regulation for California.

CCA

A Community Choice Aggregation is a type of energy supply program that allows cities and counties to aggregate the buying power of individual customers within a jurisdiction to secure alternative energy supplies.

CCE

Community Choice Energy is a type of energy supply program that allows cities and counties to contract with a licensed energy service provider to purchase energy in bulk, build renewable energy generating facilities, and implement energy efficiency programs.

CEC

The California Energy Commission is the State's primary energy policy and planning agency focused on energy costs and environmental impacts of energy use.

CEQA

The California Environmental Quality Act (California Public Resources Code § 21000 et seq.,) is a State statute adopted in 1970 that requires agencies to analyze and disclose the environmental impacts of proposed projects.

CFCs

Chlorofluorocarbons, also considered a greenhouse gas, are nontoxic, nonflammable chemicals containing atoms of carbon, chlorine, and fluorine. They are used in the manufacture of aerosol sprays, blowing agents for foams and packing materials, as solvents, and as refrigerants.

CH_4

Methane, also considered a greenhouse gas, is a chemical compound with the chemical formula of one atom of carbon and four atoms of hydrogen. Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

CIP

The Capital Improvement Program consists of improvements to roads and bridges, facilities at the eight County of San Diego-owned and operated airports and airstrips, flood control facilities in unincorporated areas, and wastewater facilities owned and operated by the County of San Diego.

CNRA

The California Natural Resources Agency is responsible for protecting historical, natural and cultural sites, monitoring and controlling state lands and waterways, and regulating fish and game use.

County of San Diego

The County of San Diego is the second largest County in California by population and ranks 5th in population of all metropolitan areas in the U.S. with over 3 million residents. The County of San Diego covers 4,261 square miles, extending 75 miles along the Pacific Coast from Mexico to Orange County and inland 75 miles to Imperial County along the international border shared with Mexico. The Board of Supervisors has land use authority over the unincorporated communities of the county.

CO_2

Carbon dioxide, also considered a greenhouse gas, is a colorless gas with a density about 60 percent higher than that of air. Carbon dioxide consists of a carbon atom covalently double bonded to two oxygen atoms. Carbon dioxide is the most significant long-lived greenhouse gas in the Earth's atmosphere. Since the Industrial Revolution emissions, primarily from use of fossil fuels and deforestation, have rapidly increased its concentration in the atmosphere, leading to a changing climate. Carbon dioxide also causes ocean acidification because it dissolves in water to form carbonic acid.

CO_2e

Carbon dioxide equivalent is a measurement used to compare the emissions of various greenhouse gases based on global warming potential.

CREB

The Clean Renewable Energy Bond is a tax credit bond primarily used in the public sector to finance renewable energy projects. The bondholder receives federal tax credits in lieu of a portion of the traditional bond interest, resulting in lower effective interest rates for the borrower.

CREP

The Comprehensive Renewable Energy Plan presents a comprehensive approach to renewable energy and energy efficiency by considering technology, appropriate zoning and development standards, and fiscal and financial impacts and community benefits, including costs and consumers.

DEH

The Department of Environmental Health, a County of San Diego department, is responsible for protecting public health and safeguarding environmental quality, educating the public to increase environmental awareness, and implementing and enforcing federal, state, and local environmental laws.

DGS
The Department of General Services, an internal service department within the County of San Diego, is responsible for ensuring that the County of San Diego Departments have the necessary workspaces, services, and vehicles to accomplish the business objectives.

DHR
Human Resources, a County of San Diego department, is responsible for recruiting and retaining a skilled and diverse workforce for the County of San Diego Departments.

DMV
The Department of Motor Vehicles registers motor vehicles and boats and issues driver's licenses in California.

DOC
The Department of Conservation is a department within the government of California, belonging to the California Natural Resources Agency, responsible for managing working lands to administer a variety of programs vital to California's public safety, environment, and economy.

DOE
The U.S. Department of Energy is a Cabinet-level Department of the U.S. government concerned with U.S. policies regarding energy and safety in handling nuclear material.

DPR
The Department of Parks and Recreation, a County of San Diego department, is responsible for enhancing the parks and recreation system, while preserving natural resources.

DPW
The Department of Public Works, a County of San Diego department, is responsible for constructing and maintaining roadways and bridges, network of sewage pipes and pump stations, flood channels and detention facilities; operating eight County airports; implementing state waste reduction mandates; and overseeing inactive landfills.

DWR
The California Department of Water Resources, part of the California Natural Resources Agency, is responsible for the state's management and regulation of water usage.

eBlast
An eBlast is a form of mass communication in which an electronic newsletter is sent to subscribers via email. The Department of Planning & Development Services publishes an eBlast newsletter.

EEM
An energy efficient mortgage is a mortgage that credits a home's energy efficiency in the mortgage itself.

EFMP
The Enhanced Fleet Modernization Program, implemented by the California Air Resources Board, augments the state's existing vehicle retirement program by providing incentive funding to eligible consumers to replace vehicles that meet certain eligibility guidelines.

EIR
An Environmental Impact Report serves to inform governmental agencies and the public of a project's environmental impacts. Further, it is required to propose mitigations and alternatives which may reduce or avoid any significant adverse environmental impacts.

EP3
The Environmentally Preferable Purchasing Policy addresses environmentally preferable procurement of goods and services.

EPA
The U.S. Environmental Protection Agency is a federal agency created to protect human health and the environment by writing and enforcing regulations based on laws passed by Congress.

EPR
The Extended Producer Responsibility is a strategy designed to promote the integration of environmental costs associated with goods throughout their life cycles into the market price of the products.

EV
An electric vehicle uses one or more electric motors or traction motors for propulsion.

FEMA
The Federal Emergency Management Agency is responsible for coordinating the response to a disaster that has occurred in the U.S. and that overwhelms the resources of local and state authorities. The governor of the state in which the disaster occurs must declare a state of emergency and formally request from the President of the United States that the federal government respond to the disaster.

FMP
The Flooding Management Plan is a plan detailing structural weakness in flood infrastructure, flood management policies, and good financial investments to protect people and property from flooding.

GHG
Greenhouse gas is a type of gas that causes heat to be trapped in the atmosphere, resulting in warming effects for the Earth.

GHG Rx
The Greenhouse Gas Reduction Exchange is a registry and information exchange for greenhouse gas emissions reduction credits designed specifically to benefit California.

GSA
Groundwater Sustainability Agencies are responsible for developing and implementing a Groundwater Sustainability Plan to meet the sustainability goal of the basin and ensure that it is operated within its sustainable yield without causing undesirable results.

Guidelines for Determining Significance
The Guidelines for Determining Significance for Climate Change would be used by County staff for the review of discretionary projects and environmental documents pursuant to the California Environmental Quality Act. The intent of the Guidelines is to provide a consistent, objective, and predictable evaluation of significant effects.

GWP
Global warming potential is a relative measure of how much heat a greenhouse gas traps in the atmosphere.

HERO
The Home Energy Renovation Opportunity provides financing for energy-efficient, water-conserving, renewable energy, and hurricane protection home improvements.

HHSA
The Health and Human Services Agency, a County of San Diego Agency, provides a broad range of health and social services.

ICLEI
International Council for Local Environmental Initiatives is an international association of local, national, and regional government organizations that have made a commitment to sustainable development.

IP
The Implementation Plan, a component of the County of San Diego Local Coastal Program, provides development regulations for specific coastal zone activities and implementation measures needed to carry out the Land Use Plan.

IPCC
The Intergovernmental Panel on Climate Change is a scientific intergovernmental body under the auspices of the United Nations.

LCP
The Local Coastal Program guides development within the coastal zone, provides ground rules for future development, and protects coastal resources in the County of San Diego.

LEED
Leadership in Energy and Environmental Design is an internationally recognized green building certification program, which provides third-party verification that a building or community was designed and built using sustainable approaches, with particular regard to energy savings, water efficiency, carbon dioxide emissions reductions, and improved indoor environmentally quality, among other criteria.

LUP
The Land Use Plan, a component of the County of San Diego Local Coastal Program, includes policies and programs to implement the Local Coastal Program.

m
Meter is the base unit of length in the International System of Units.

MHMP
The Multi-Jurisdictional Hazard Mitigation Plan for the County of San Diego was prepared with input from County residents and agencies to guide the region toward greater disaster resistance in harmony with the character and needs of the community.

MMT
Million metric ton is a unit of measurement for greenhouse gases. See MT definition below.

MPO
A metropolitan planning organization is a federally mandated and funded transportation policy-making organization that is made up of representatives from local government and governmental transportation authorities.

MSCP
The Multiple Species Conservation Program preserves and protects San Diego's unique and native habitats and watersheds and water quality. It also streamlines the permitting process for development projects and ensures compliance with federal and state regulations.

MT
Metric ton is a unit of measurement for greenhouse gases. A metric ton is a non-Institutional System of Units unit of mass equal to 1,000 kilograms or approximately 2,204.6 pounds.

MTS
The Metropolitan Transit System is a transit agency providing public transportation for the San Diego region.

MWD

The Metropolitan Water District of Southern California delivers water to 26 member public agencies throughout Ventura, Los Angeles, San Bernardino, Orange, Riverside, and San Diego counties.

N_2O

Nitrous oxide, also considered a greenhouse gas, is a chemical compound and an oxide of nitrogen. Nitrous oxide is naturally present in the atmosphere as part of the Earth's nitrogen cycle, and has a variety of natural sources. However, human activities such as agriculture, fossil fuel combustion, wastewater management, and industrial processes are increasing the amount in the atmosphere.

NA

Not available indicates that data were not recorded or obtainable.

NCTD

The North County Transit District is a transit agency providing public transportation for North San Diego County.

NOAA

The National Oceanic and Atmospheric Administration is a scientific agency within the U.S. Department of Commerce focused on the conditions of the oceans and the atmosphere.

NOP

A Notice of Preparation is a public notice sent by a lead agency to notify the responsible agencies, trustee agencies, and involved federal and state agencies that the lead agency plans to prepare an environmental impact report or environmental assessment.

O_3

Ozone, also considered a greenhouse gas, is an inorganic molecule formed from dioxygen by the action of ultraviolet light and also atmospheric electrical discharges, and is present in low concentrations throughout the Earth's atmosphere.

OBF

On-Bill Financing provides financing for qualifying energy-efficient business improvements including lighting, refrigeration, heating, ventilation, air conditioning, and light-emitting diode streetlights.

OES

The Office of Emergency Services coordinates the County of San Diego's response to disasters and is responsible for alerting and notifying appropriate agencies when disaster strikes; coordinating all agencies that respond; ensuring resources are available and mobilized in times of disaster; developing plans and procedures for response to and recovery from disasters; and developing and providing preparedness materials for the public.

OPR

The Office of Planning and Research, created by statute in 1970, serves the Governor and his Cabinet as staff for long-range planning and research, and constitutes the comprehensive state planning agency.

P2P

Peer-to-Peer lending is geared towards individuals seeking financing for investments, loans, and new businesses, with the promise that the lenders will get their money paid back to them in a timely manner.

Property Assessed Clean Energy

Property Assessed Clean Energy is a form of long-term financing that creates municipal finance districts to provide loans to homeowners and businesses for energy-efficient retrofits and renewable energy system installations. Loans are repaid through an annual surcharge on property tax assessments.

PACE Program

Purchase of Agriculture Conservation Easement is an agricultural conservation program intended to promote the long-term preservation of agriculture in the County of San Diego. Agricultural property owners are compensated for placing a perpetual 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.

PAYS

Pay As You Save is a market-based system that enables utility customers to purchase and install cost-effective energy efficiency upgrades or distributed renewable energy assets through a voluntary tariff.

PDR

The Purchase of Development Rights is a voluntary program that compensates owners of agricultural property for accepting a permanent deed restriction (through a conservation easement) of their land.

PDS

Planning & Development Services, a County of San Diego department, is responsible for long-range land use planning, building plan review, building inspection, code compliance, and advising the Board of Supervisors and Planning Commission on planning projects.

PPA

A power purchase agreement is a contract between two parties, one who generates electricity (the seller) and one who is looking to purchase electricity (the buyer).

ppm

Parts per million is a measurement unit of concentration.

PV

Photovoltaic refers to a method of converting solar energy into direct current electricity using semiconducting materials.

QECB

The Qualified Energy Conservation Bond enables qualified state, tribal, and local government issuers to borrow money at attractive rates to fund energy conservation projects.

RCP

The Regional Comprehensive Plan, developed by the San Diego Association of Governments; serves as a long-term planning framework for the region; provides a broad context in which local and regional decisions can be made; and balances regional population, housing, and employment growth with habitat preservation, agriculture, open space, and infrastructure needs.

REVI

Regional Electric Vehicle Infrastructure, a Working Group established by the San Diego Association of Governments, assesses planning and siting issues and typical barriers to electric vehicle development.

RFP

A Request for Proposal is a solicitation by an agency or company interested in procurement of a service to potential suppliers to submit business proposals.

RTP

A Regional Transportation Plan is a plan that identifies

transportation projects to serve entire regions.

SANDAG

The San Diego Association of Governments is the San Diego region's primary public planning, transportation, and research agency; providing the public forum for regional policy decisions about growth, transportation planning and transit construction, environmental management, housing, open space, energy, public safety, and binational topics.

SanGIS

The San Diego Geographic Information Source is a Joint Powers Authority of the County of San Diego and the City of San Diego responsible for maintaining a regional geographic information system and data warehouse.

SB

A Senate Bill, pursuant to California law, is proposed legislation that either originated or was modified in the California Senate. To become law, a Senate Bill must also be approved in the Assembly and be signed by the Governor.

Scoping Plan Update

On January 20, 2017, the California Air Resources Board released *The 2017 Climate Change Scoping Plan Update*, which lays out the framework for achieving the 2030 reductions as established in more recent legislation (e.g., Senate Bill 32). The proposed 2017 Scoping Plan Update identifies the GHG reductions needed by each emissions sector to achieve a statewide emissions level that is 40% below 1990 levels before 2030.

SCS

A Sustainable Communities Strategy is a comprehensive land use and regional growth strategy that serves as a companion document to a Regional Transportation Plan. It shows how a region will met a vehicles miles traveled per capita goal established by the California Air Resources Board.

SDAPCD

The San Diego County Air Pollution Control District is the local air pollution control district for the County of San Diego.

SDCFA

The San Diego County Fire Authority delivers emergency medical and fire services, and coordinates fire prevention for the County of San Diego.

SDCPHS

The San Diego County Public Health Services works to prevent epidemics and the spread of disease, protects against environmental hazards, prevents injuries, and promotes and encourages healthy behaviors, and responds to disasters and assist communities in recovery and assure the quality and accessibility of health services throughout the County of San Diego.

SDCWA

The San Diego County Water Authority is responsible for providing safe and reliable water supply to the agencies serving the San Diego region.

SDG&E

San Diego Gas & Electric is the utility that provides natural gas and electricity to the county.

SGC

The California Strategic Growth Council brings together agencies and departments to support communities; emphasizing strong economies, social equity, and environmental stewardship.

SGMA

The State Sustainable Groundwater Management Act provides a framework for sustainable management of groundwater supplies by local authorities, with a limited role for state intervention only if necessary to protect the resource.

SWRCB

The State Water Resources Control Board protects the state's water quality, implements the federal Clean Water Act in California, sets Statewide policy, and allocates surface water rights.

TDM

Transportation Demand Management is the application of strategies and policies to reduce travel demand.

UHIE

Urban Heat Island Effect is an urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities. The temperature difference usually is larger at night than during the day, and is most apparent when winds are weak. The main cause of the urban heat island effect is from the modification of land surfaces (e.g., paving).

UNFCCC

The United Nations Framework Convention on Climate Change, an international environmental treaty adopted on May 9, 1992, is responsible for stabilizing greenhouse gas concentrations in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system.

USACE

The U.S. Army Corps of Engineers is responsible for strengthening the nation's security by building and maintaining infrastructure, providing military facilities, and researching and developing technology.

USBR

The U.S. Bureau of Reclamation oversees water resource management as it applies to the oversight and operation of the diversion, delivery, and storage projects.

USFS

The U.S. Forest Service manages and protects national forests and grasslands, maintains a wildland firefighting team, and conducts forestry research.

VMT

Vehicle miles traveled is a measurement of vehicle travel.

ZNE

Zero net energy is building energy use of no more energy over the course of a year that can be generated onsite through renewable resources such as solar, wind, and geothermal power.

REFERENCES

EXECUTIVE SUMMARY

None present.

CHAPTER 1, INTRODUCTION

CARB. See California Air Resources Board.

California Air Resources Board. 2017 (January). *The 2017 Climate Change Scoping Plan Update, The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target*. January 20. Available: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf. Accessed March 8, 2017.

County. See County of San Diego.

Intergovernmental Panel on Climate Change. 2007. Frequently Asked Questions: What is the Greenhouse Effect. Available: http://ipcc.ch/publications_and_data/ar4/wg1/en/faq-1-3.html. Accessed December 19, 2016.

_____. 2014 (November). *Climate Change 2014 Synthesis Report: Approved Summary for Policymakers*. Available: http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf. Accessed March 8, 2017.

IPCC. See Intergovernmental Panel on Climate Change.

San Diego, County of. 2011 (August). County of San Diego, General Plan Update. Available at: http://www.sandiegocounty.gov/content/sdc/pds/generalplan.html. Prepared by County of San Diego. Accessed January 4, 2016.

CHAPTER 2, GREENHOUSE GAS EMISSIONS INVENTORY, FORECASTS, AND REDUCTION TARGETS

CARB. See California Air Resources Board.

California Air Resources Board. 2014 (May). First Update to the Climate Change Scoping Plan. Available http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf. Accessed March 8, 2017.

_____. 2016 (June). California Greenhouse Gas Inventory for 2000-2014. Available: http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed April 12, 2017. Last updated June 17, 2016.

_____. 2017 (January). *The 2017 Climate Change Scoping Plan Update, The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target*. January 20. Available: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf. Accessed March 8, 2017.

California Department of Finance. 2014 (May). (December). Report P-2. State and County Population Projections by Race/Ethnicity and Age (5-year groups). 2010 through 2060 (as of July 1). Prepared by Walter Schwarm, Demographic Research Unit. Available: http://www.dof.ca.gov/Forecasting/Demographics/projections/. Accessed April 12, 2017.

DOF. See California Department of Finance.

Intergovernmental Panel on Climate Change. 2007. Frequently Asked Questions: What is the Greenhouse Effect. Available: http://ipcc.ch/publications_and_data/ar4/wg1/en/faq-1-3.html. Accessed December 19, 2016.

IPCC. See Intergovernmental Panel on Climate Change.

CHAPTER 3, GREENHOUSE REDUCTION STRATEGIES AND MEASURES

None present.

CHAPTER 4, CLIMATE CHANGE VULNERABILITY, RESILIENCY, AND ADAPTATION

CalBRACE. See California Department of Public Health's Building Resilience Against Climate Effects.

CAL FIRE. See California Department of Forestry and Fire Protection.

California Department of Forestry and Fire Protection. 2007. Fire Hazard Severity Zones for San Diego County. Available: http://frap.fire.ca.gov/webdata/maps/san_diego/fhszs_map.37.pdf. Accessed: April 20, 2017.

California Department of Health's Building Resilience Against Climate Effects. 2016. *Draft Climate Change and Health Vulnerability Assessment Report: San Diego County*.

California Department of Water Resources. 2008. *Managing an Uncertain Future: Climate Change Adaption Strategies for California's Water*. Available: http://www.water.ca.gov/climatechange/docs/ClimateChangeWhitePaper.pdf. Accessed: April 26, 2017.

_____. 2013. California Water Plan Update 2013: Investing in Innovation and Infrastructure. Available: http://www.water.ca.gov/waterplan/docs/cwpu2013/Final/0a-Vol1-full2.pdf. Accessed: April 26, 2017.

California Energy Commission. 2012. Our Changing Climate: Vulnerability & Adaptation to the Increasing Risks of Climate Change in California. Available: http://www.energy.ca.gov/2012publications/CEC-500-2012-007/CEC-500-2012-007.pdf. Accessed April 21, 2016.

_____. 2016. Cal-Adapt Wildfire: Fire Risk Map for High- and Low-Emissions Scenarios. Available: http://cal-adapt.com/fire/. Accessed: April 21, 2016. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017a. Cal-Adapt Annual Averages Tool for RCP 4.5 for Maximum Temperature. Available: http://beta.cal-adapt.org/tools/annual-averages/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017b. Cal-Adapt Annual Averages Tool for RCP 8.5 for Maximum Temperature. Available: http://beta.cal-adapt.org/tools/annual-averages/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017c. Cal-Adapt Annual Averages Tool for RCP 4.5 for Minimum Temperature. Available: http://beta.cal-adapt.org/tools/annual-averages/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017d. Cal-Adapt Annual Averages Tool for RCP 8.5 for Minimum Temperature. Available: http://beta.cal-adapt.org/tools/annual-averages/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017e. Cal-Adapt Extreme Heat Tool for RCP 4.5 for Number of Extreme Heat Days. Available: http://beta.cal-adapt.org/tools/extreme-heat/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017f. Cal-Adapt Extreme Heat Tool for RCP 8.5 for Number of Extreme Heat Days. Available: http://beta.cal-adapt.org/tools/extreme-heat/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017g. Cal-Adapt Extreme Heat Tool for RCP 4.5 for Timing of Extreme Heat Days. Available: http://beta.cal-adapt.

org/tools/extreme-heat/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017h. Cal-Adapt Extreme Heat Tool for RCP 8.5 for Timing of Extreme Days. Available: http://beta.cal-adapt.org/tools/extreme-heat/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017i. Cal-Adapt Annual Averages Tool for RCP 4.5 for Average Precipitation. Available: http://beta.cal-adapt.org/tools/annual-averages/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017j. Cal-Adapt Annual Averages Tool for RCP 8.5 for Average Precipitation. Available: http://beta.cal-adapt.org/tools/annual-averages/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

_____. 2017k. Cal-Adapt Sea-Level Rise Tool for 1.4-Meter Rise in Sea Level Combined with a 100-Year Flood Event. Available: http://beta.cal-adapt.org/tools/slr-calflod-3d/. Accessed, April 21, 2017. Prepared under contract by UC Berkeley Geospatial Innovations Facility.

California Natural Resources Agency. 2012. *California Adaptation Planning Guide*. Available: http://resources.ca.gov/docs/climate/01APG_Planning_for_Adaptive_Communities.pdf. Accessed: April 26, 2017.

_____. 2014 (July). Safeguarding California: Reducing Climate Risk. An update to the 2009 California Climate Adaptation Strategy. Available: http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf. Accessed April 23, 2016.

CEC. See California Energy Commission.

Christiansen, Niklas S., Andrew W. Wood, Nathalie Voisin, Dennis P. Lettenmaier, and Richard N. Palmer. 2004. The Effects of Climate Change on the Hydrology and Water Resources of the Colorado River Basin. Department of Civil and Environmental Engineering, University of Washington, Seattle.

CNRA. See California Natural Resource Agency.

County of San Diego Office of Emergency Services. 2014 (September). *Unified San Diego County Emergency Services Organizations and County of San Diego Operational Area Emergency Operations Plan*. Available: http://www.sandiegocounty.gov/content/dam/sdc/oes/emergency_management/plans/op-area-plan/2014/Updates/2014-OA-EOP-Basic-Plan-and-All-Annexes.pdf. Accessed: April 21, 2017.

_____. 2015. *Multi-Jurisdictional Hazard Mitigation Plan*.

County of San Diego Planning and Development Services. No Date. *About the Sustainable Groundwater Management Act*. Available: http://www.sandiegocounty.gov/pds/SGMA.html. Accessed: April 21, 2017.

DOE. *See* U.S. Department of Energy.

Heat Island Group. Cool Pavements. Available: https://heatisland.lbl.gov/coolscience/cool-pavements. Accessed: January 13, 2017.

Intergovernmental Panel on Climate Change. 2001. *Climate Change 2001 Synthesis Report: Summary for Policymakers.* Available: https://www.ipcc.ch/ipccreports/tar/vol4/english/index.htm /. Accessed May 24, 2016.

IPCC. *See* Intergovernmental Panel on Climate Change.

OES. See County of San Diego Office of Emergency Services.

Poseidon Water. 2017. Claude "Bud" Lewis Carlsbad Desalination Plant Frequently Asked Questions. Available: http://www.carlsbaddesal.com/faqs.html. Accessed May 21, 2017.

San Diego, County of. 2011 (August). *San Diego County General Plan*. Available: http://www.sandiegocounty.gov/pds/gpupdate/docs/GP/Cover_Intro_Vision.pdf. Accessed: April 20, 2017.

_____. 2017 (January). *Local Coastal Program Land Use Plan*. Available: http://www.sandiegocounty.gov/content/sdc/pds/advance/county-of-san-diego-local-coastal-program.html. Accessed February 27, 2017.

San Diego County Water Authority. 2012 (April). *Water Shortage and Drought Response Plan*. Available: http://www.sdcwa.org/sites/default/files/files/water-shortage-drought-response-plan.pdf. Accessed. May 21, 2017.

_____. 2016. San Diego County's Water Supplies. Available: San Diego County Water Authority: https://www.sdcwa.org/san-diego-county-water-sources. Accessed: April 20, 2017.

SDCWA. See San Diego County Water Authority.

U.S. Department of Energy. 2010 (July). *Guidelines for Selecting Cool Roofs V 1.2*. Building Technologies Program. Available: https://heatisland.lbl.gov/sites/all/files/coolroofguide_0.pdf. Accessed: April 26, 2017.

CHAPTER 5, IMPLEMENTATION AND MONITORING

None present.

CHAPTER 6, PUBLIC OUTREACH AND ENGAGEMENT

SANDAG. See San Diego Association of Governments.

San Diego Association of Governments. 2011. *2050 Regional Transportation Plan*. Available: http://www.sandag.org/uploads/2050RTP/F2050rtp_all.pdf. Accessed: April 24, 2017.

County. See County of San Diego.

San Diego, County of. 2011. *San Diego County General Plan: A Plan for Growth, Conservation, and Sustainability*. Available: http://www.sandiegocounty.gov/content/dam/sdc/pds/gpupdate/docs/GP/Cover_Intro_Vision.pdf. Accessed; April 24, 2017.

_____. 2016. *Public Outreach and Engagement Plan*. Available: http://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/SDCountyCAP-PublicOutreachandEngagementPlan.pdf. Accessed: April 24, 2017.

_____. [No date]. *Five Year Capital Improvement Plan 2016/2017 to 2020/2021*. Available: http://www.sandiegocounty.gov/content/dam/sdc/dpw/ENGINEERING_SERVICES/engineerpdf/5yrplan.pdf. Accessed: April 25, 2017.

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