



Sustainable Santee Plan

The City's Roadmap to Greenhouse Gas Reductions

Draft – February 2019

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Sustainable Santee Plan: The City's Roadmap to Greenhouse Gas Reductions

Prepared for:



City of Santee
10601 Magnolia Avenue
Santee, California 92071

Prepared by:

LSA

20 Executive Park, Suite 200
Irvine, California 92614

Funded in part by:



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Acronyms and Abbreviations

AB	Assembly Bill
ABAU	Adjusted Business-As-Usual
CARB	California Air Resources Board
BAU	Business-As-Usual
° C	degrees Celsius
Cal/EPA	California Environmental Protection Agency
CALGreen	California's Green Building Standard Code
CalRecycle	California Department of Resources Recycling and Recovery
CCA/E	Community Choice Aggregation/Energy
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH ₄	methane
CIP	Capital Improvement Program
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
EE	energy efficiency
EEM	Energy Efficient Mortgages
EIR	Environmental Impact Report
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EV	Electric Vehicles
°F	degrees Fahrenheit
GHG	greenhouse gas
GWP	global warming potential
HERO	Home Energy Renovation Opportunity
HEV	Hybrid Electric Vehicles
HFC	Hydrofluorocarbons
HOA	Home-Owner Association
HVAC	Heating, venting, and air conditioning
IFT	Emissions Inventory, Forecasting, and Targets
IPCC	Intergovernmental Panel on Climate Change



ACRONYMS AND ABBREVIATIONS

kWh	kilowatt-hours
lb(s)	pound(s)
LCFS	Low Carbon Fuel Standard
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design
MT	metric tons
MWh	megawatt-hours
N ₂ O	nitrous oxide
OBF	on-Bill Financing
PACE	Property Assessed Clean Energy
PFC	Perfluorocarbons
PITT	plan implementation tracker tool
Plan	Sustainable Santee Plan
ppb	parts per billion
ppm	parts per million
RTP	Regional Transportation Plan
SANDAG	San Diego Associated Governments
SB	Senate Bill
SDG&E	San Diego Gas & Electric
SF ₆	sulfur hexafluoride
SCS	Sustainable Communities Strategy
SEEC	Statewide Energy Efficiency Collaborative
SP	service population
SWRCB	State Water Resources Control Board
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
VMT	vehicle miles traveled



Executive Summary

The City of Santee (City) is committed to providing a more livable, equitable, and economically vibrant community through the incorporation of energy efficiency features and reduction of greenhouse gas (GHG) emissions. By using energy more efficiently, the City will keep dollars in the local economy, create jobs, and improve the community’s quality of life. The efforts toward reducing City-wide greenhouse gas emissions described in this report would be done in coordination with the City’s other planning land use decisions. Through the *Sustainable Santee Plan: The City’s Roadmap to Greenhouse Gas Reductions* (“Sustainable Santee Plan”), the City has established goals and policies that incorporate environmental responsibility into its daily management of its community and municipal operations.

INVENTORIES

The first step in completing the Sustainable Santee Plan was to update the City’s GHG emissions inventory. In 2015, the City completed the 2005, 2008, 2012 and 2013 emissions inventories for community-wide sectors. The results of the 2005 and 2013 inventories are shown in FIGURE ES-1. Sector-level emissions for 2005 and 2013 are also shown in TABLE ES-1.

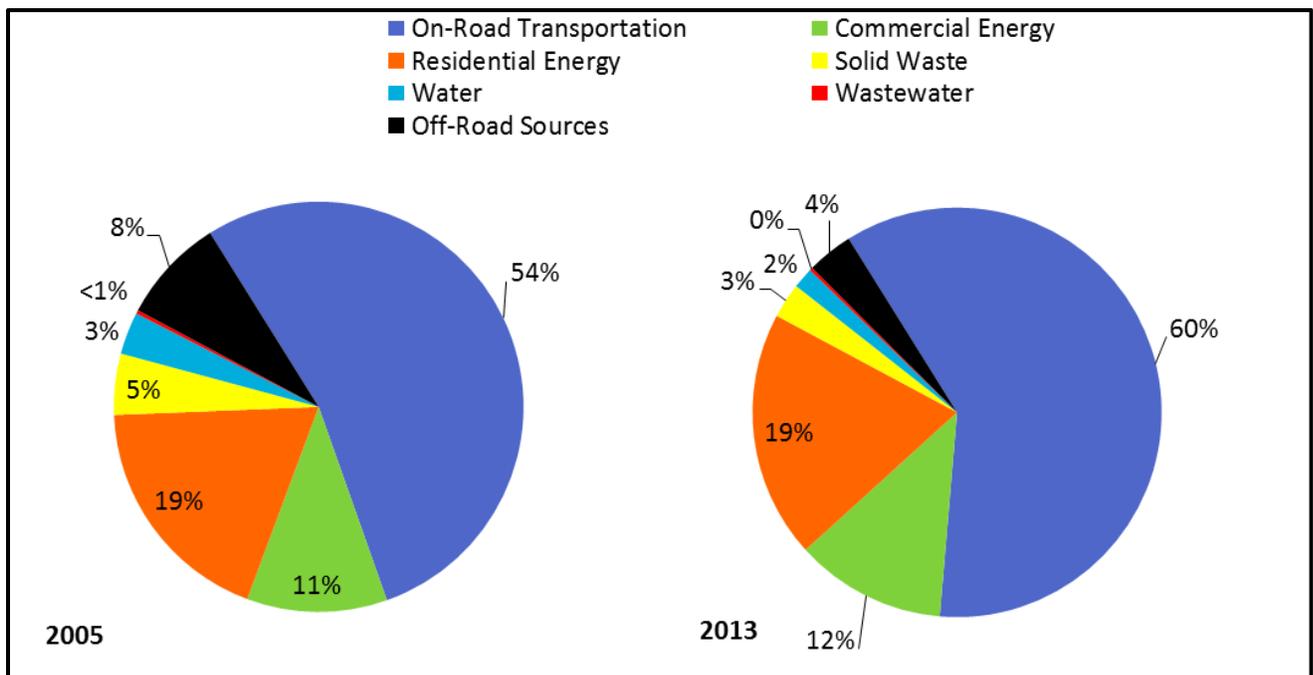


FIGURE ES-1 Community GHG Emissions by Sector for 2005 and 2013



TABLE ES-1 Community-Wide GHG Emissions by Sector for 2005 and 2013

Sector	2005 (MT CO ₂ e)	2013 (MT CO ₂ e)	% Change 2005–2013
On-Road Transportation	181,812	242,499	33.4%
Residential Energy	63,544	78,651	23.8%
Commercial Energy	37,697	48,025	27.4%
Solid Waste	16,376	11,151	-31.9%
Water	11,354	6,578	-42.1%
Off-Road Sources	28,230	14,699	-47.9%
Wastewater	959	971	1.3%
Total	339,972	402,574	18.4%

Similarly, the City’s municipal operations were inventoried for 2005 and 2013. FIGURE ES-2 shows the municipal emissions. Municipal emissions are a subset of community emissions and account for less than 1 percent of community emissions. Sector-level details for 2005 and 2013 are shown in TABLE ES-2.

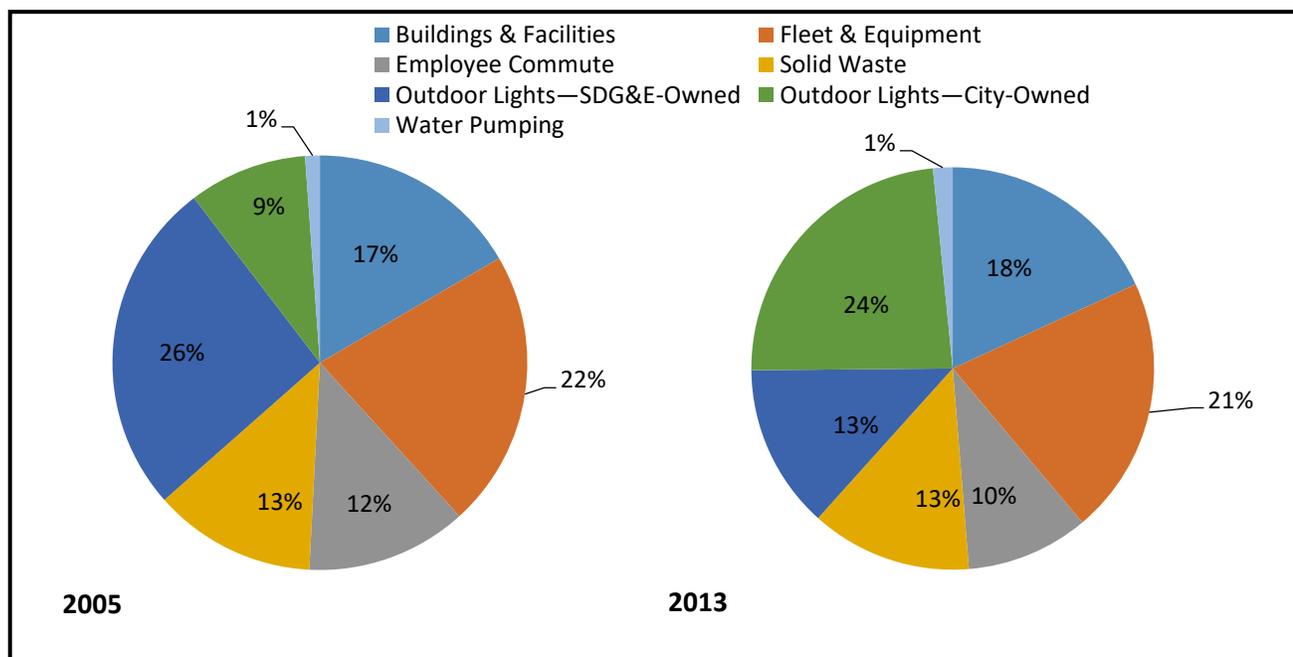


FIGURE ES-2 Municipal GHG Emissions by Sector for 2005 and 2013



TABLE ES-2 Municipal GHG Emissions by Sector for 2005 and 2013

Sector	2005 (MT CO ₂ e)	% of Total	2013 (MT CO ₂ e)	% of Total	% Change 2005–2013
Outdoor Lights–SDG&E-Owned	433	26%	252	13%	-42%
Fleet & Equipment	359	22%	396	21%	10%
Buildings & Facilities	275	17%	346	18%	10%
Solid Waste	210	13%	247	13%	18%
Employee Commute	208	13%	188	10%	-10%
Outdoor Lights–City-Owned	153	9%	450	24%	194%
Water Pumping	19.0	1%	30.0	2%	58%
Total	1,657		1,909		15%

FORECASTS AND TARGET SETTING

The next step in the process was to estimate future emissions in the City and establish GHG reduction targets.

The City’s future emissions were estimated using demographic indicators such as population and jobs growth. Emissions for the City’s municipal operations were estimated using the number of staff anticipated in future years. Growth indicators used are shown by sector in TABLE ES-3.

TABLE ES-3 Growth Indicators for 2013, 2020, and 2035

Sector	Demographic Indicator	2013	2020	2035
Solid Waste, Water, Wastewater, Off-Road Sources	Service Population (Population + Jobs)	71,663	76,437	84,200
Population ¹	Population	55,033	59,488	63,518
Residential Energy	Households	19,725	20,995	24,165
Commercial/Industrial Energy	Jobs	16,630	16,949	20,682
Transportation ²	VMT – Gas	458,785,827	493,494,150	576,966,520
	VMT – Diesel	27,822,637	32,536,348	45,500,895
Municipal Jobs (FTE)	Municipal Emissions ³	112.8	115	120

SOURCE: SANDAG

FTE = Full-time equivalent employees

¹ Population data are shown for informational purposes but are not used for forecasting any sector.

² 2020 VMT is derived from the compound annual growth rate between 2013 and 2035.

³ The number of jobs in the City is used as an indicator for all municipal operation emissions.



EXECUTIVE SUMMARY

Future emissions estimates also included reductions that would happen with implementation of legislation adopted at the State level. That is, some level of emission reduction is anticipated within the City as a result of policies implemented at the State level, including:

- Low Carbon Fuel Standard
- Assembly Bill (AB) 1493 and Advanced Clean Cars
- California Building Code Title 24
- Renewable Portfolio Standard
- Senate Bill X7-7

The resulting projected emissions are considered an “adjusted” business-as-usual (Adjusted BAU) forecast. Historic emissions, and Adjusted BAU forecasts are shown in FIGURE ES-3 (community) and FIGURE ES-4 (municipal).

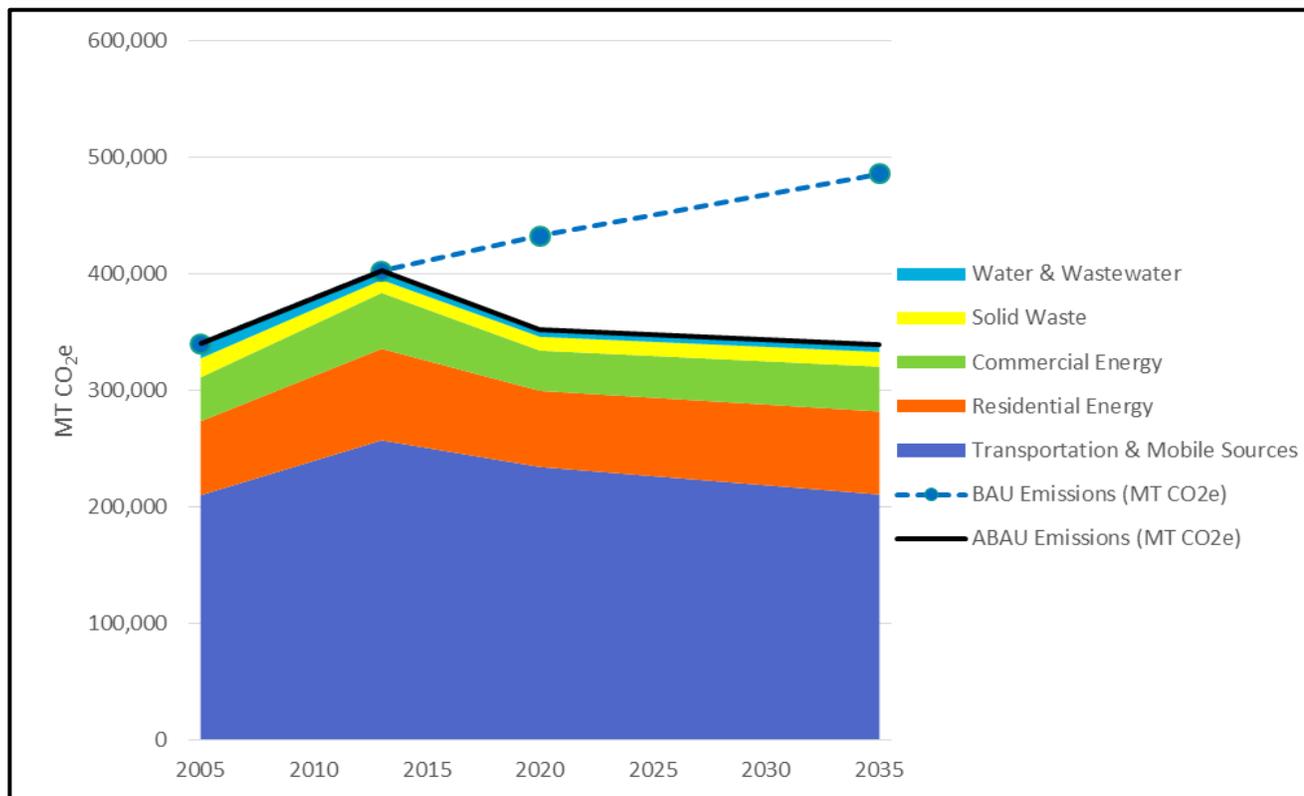


FIGURE ES-3 Community BAU and ABAU Emissions Forecast

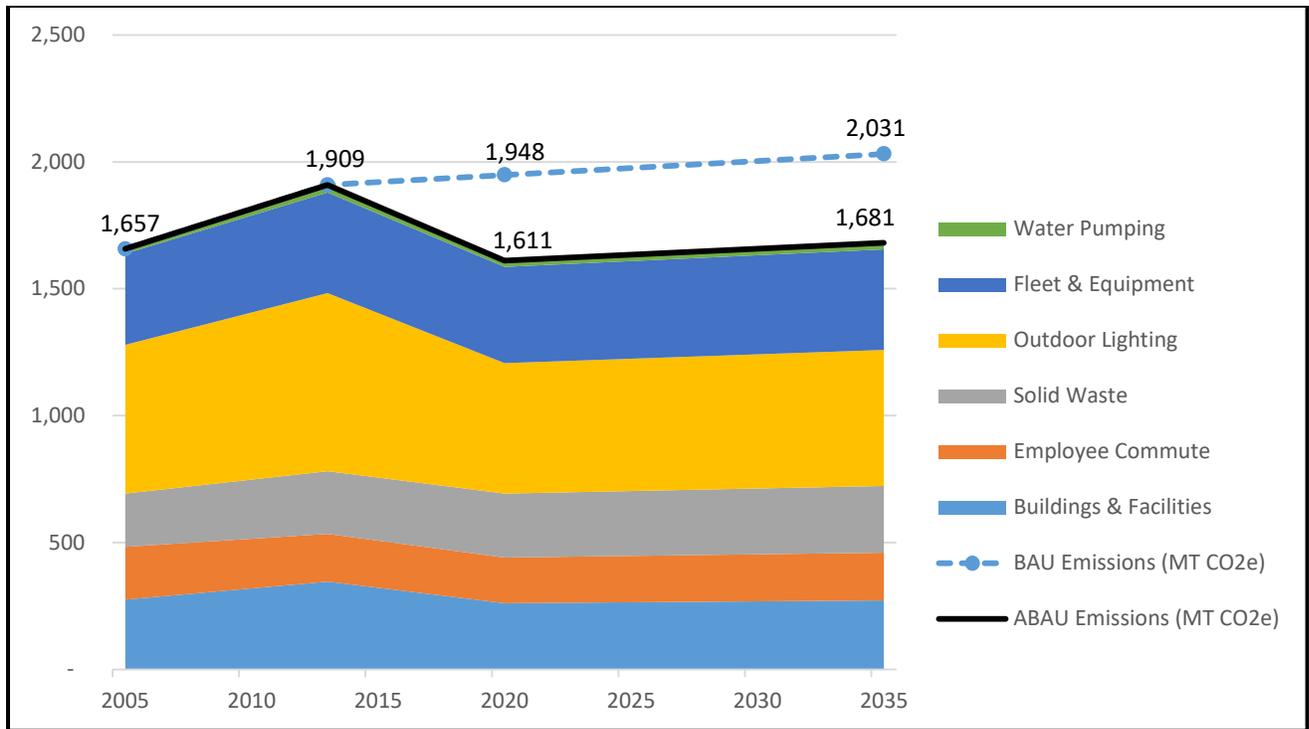


FIGURE ES-4 Municipal BAU and ABAU Emissions Forecast

Both mass emissions (performance target) and per capita emissions (efficiency target) GHG reductions targets were identified for 2020, 2030, and 2035. The City has established the following reduction targets that are consistent with current regulation.

Mass Emissions Targets

Consistent with the State’s adopted AB 32 GHG reduction target, the City has set a goal to reduce emissions to 1990 levels by the year 2020. This target was calculated as a 15 percent decrease from 2005 levels, as recommended in the AB 32 Scoping Plan. An interim goal for the City was created for 2030, which was to reduce emissions to 40 percent below 2005 levels. A longer-term goal was established for 2035, which was to reduce emissions to 49 percent below 2005 levels. The interim and longer-term goal would put the City on a path toward the State’s long-term goal to reduce emissions 80 percent below 1990 levels by 2050 (TABLE ES-4).

TABLE ES-4 Mass GHG Reduction Targets for Community Emissions

	Community Target
2020 Target	15% below 2005 levels
2020 Emissions Goal (MT CO ₂ e)	288,976
2030 Target	40% below 2005 levels
2030 Emissions Goal (MT CO ₂ e)	203,983
2035 Target	49% below 2005 levels
2035 Emissions Goal (MT CO ₂ e)	173,386

Notes and Acronyms:

MT CO₂e = Metric tons of carbon dioxide equivalent



FIGURE ES-5 shows how the mass emissions reduction targets for community emissions aligns with the Statewide goals of reducing GHG emissions.

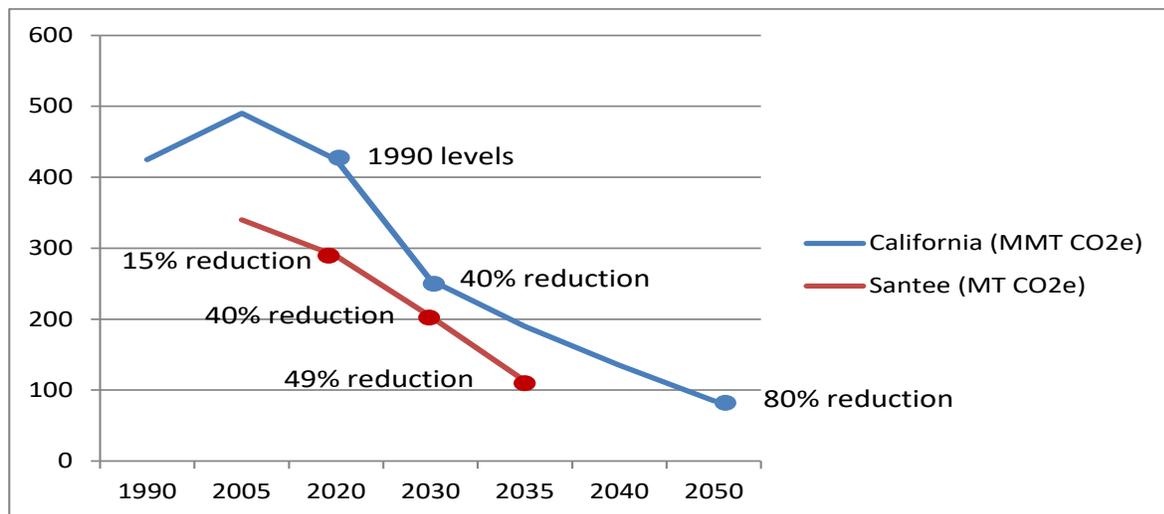


FIGURE ES-5 Comparison of State Reduction Targets with Community Emission Reduction Targets

Per Capita Emissions Targets

The 2017 Scoping Plan Update recommends local plan level GHG emissions reduction goals of no more than 6 metric tons CO₂e per capita by 2030 and no more than 2 metric tons carbon dioxide equivalent (CO₂e) per capita by 2050. These goals consider all Statewide emission sources; however, some of the emission sources are not included in the City’s GHG inventories, such as industrial and aviation, and the City has no control over these emissions. By comparing the Statewide most recent year (2015) GHG inventory and the City’s 2013 inventory, it was determined that the City had control over 63 percent of total Statewide emission sources. Therefore, the State-aligned emissions goals were proportioned to 3.8 MT CO₂e per capita by 2030, and 1.27 MT CO₂e per capita by 2050. The 2020 and 2035 goals were interpolated from the 2030 and 2050 goals, assuming same rate of reduction of the emission goals each year (TABLE ES-5).

TABLE ES-5 Per Capita GHG Reduction Targets for Community Emissions

	Community Target
2020 State Target (MT CO ₂ e/SP)	8
2020 Emissions Goal (MT CO ₂ e/SP)	5.06
2030 State Target (MT CO ₂ e/SP)	6
2030 Emissions Goal (MT CO ₂ e/SP)	3.80
2035 State Target (MT CO ₂ e/SP)	5
2035 Emissions Goal (MT CO ₂ e/SP)	3.16

Notes and Acronyms:

MT CO₂e = Metric tons of carbon dioxide equivalent per capita

SP = Service Population



REDUCTION MEASURES

The City has already demonstrated its commitment to conserve energy and reduce emissions through a variety of programs and policies. The City has adopted programs to reduce emissions such as a water efficient landscape ordinance and participation in multiple home financing programs that will allow home and business owners to obtain low-interest loans for implementing energy efficiency in their buildings. In order to reach the reduction target, the City would also implement the additional local reduction measures described in this report. These measures encourage energy efficiency, water conservation and alternative transportation. TABLE ES-6 and TABLE ES-7 summarize the reductions from measures that would be implemented to meet the community and municipal GHG reduction goals, respectively, for 2020, 2030 and 2035.

TABLE ES-6 Community GHG Reduction Strategies and Emission Reductions

Goals and Measures	2020 Emission Reductions (MT CO ₂ e)	2030 Emission Reductions (MT CO ₂ e)	2035 Emission Reductions (MT CO ₂ e)
Goal 1: Increase Energy Efficiency in Existing Residential Units			
1.1: Energy Efficiency Education and Best Practices	Supporting Measure		
1.2: Increase Community Participation in Existing Energy Efficiency Opportunities	45	45	45
1.3: Home Energy Evaluations	Supporting Measure		
1.4: Residential Home Energy Renovations	7,811	7,811	7,811
Goal 2: Increase Energy Efficiency in New Residential Units			
2.1: Energy Efficient Homes	5,102	13,534	17,750
Goal 3: Increase Energy Efficiency in Existing Commercial Units			
3.1: Energy Efficiency Training, Education, and Recognition in the Commercial Sector	Supporting Measure		
3.2: Increase Business Participation in Existing Energy Efficiency Programs	660	660	660
3.3: Non-Residential Energy Audits	Supporting Measure		
3.4: Non-Residential Retrofits	8,010	8,010	8,010
Goal 4: Increase Energy Efficiency in New Commercial Units			
4.1: Energy Efficient Businesses	1,442	8,705	12,337
Goal 5: Increase Energy Efficiency through Water Efficiency			
5.1: Water Efficiency through Enhanced Implementation of SB X7-7	1,279	1,366	1,409
5.2: Exceed Water Efficiency Standards	22	24	25
Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect			



TABLE ES-6 Community GHG Reduction Strategies and Emission Reductions

Goals and Measures	2020 Emission Reductions (MT CO ₂ e)	2030 Emission Reductions (MT CO ₂ e)	2035 Emission Reductions (MT CO ₂ e)
6.1: Tree Planting for Shading and Energy Efficiency	330	352	363
6.2: Light-reflecting Surfaces for Energy Efficiency	4	4	4
6.3: Carbon Sequestration through Preservation of Natural Lands	Supporting Measure		
Goal 7: Decrease Greenhouse Gas Emissions through Reducing Vehicle Miles Traveled			
7.1: Non-Motorized Transportation Options	438	395	373
7.2: Implement Bicycle Master Plan to Expand Bike Routes around the City	14,788	13,329	12,600
7.3: Ride Sharing Programs within Businesses	19,761	17,812	16,838
7.4: Electrify the Fleet	3,341	21,723	47,414
7.5: Complete Streets and Safe Routes to Schools Programs	5,477	4,937	4,667
7.6: Reduce Vehicle Trips To/From School	16,431	14,811	14,000
Goal 8: Decrease Greenhouse Gas Emissions through Reducing Solid Waste Generation			
8.1: Reduce Waste to Landfills	7,233	7,903	8,238
Goal 9: Decrease Greenhouse Gas Emissions through Increasing Clean Energy Use			
9.1: Clean Energy	Supporting Measure		
9.2: Community Choice Aggregation Program ¹	38,701	46,322	50,132
Goal 10: Decrease GHG Emissions from New Development through Performance Standards			
10.1: Screening Tables	393	1,003	1,308
Total Community Measures			
Total of All Measures Excluding CCA	92,569	133,135	155,605
Total of All Measures Including CCA	131,270	179,456	203,549

Notes and Acronyms:

¹ Supporting measures have no direct GHG reduction, but are able to boost other measures by increasing the participation levels.

² CCA is separated from total of other reduction measures.

BAU = Business as Usual

CCA = Community Choice Aggregation (also known as Community Choice Energy)

MT CO₂e = metric tons of carbon dioxide equivalent



TABLE ES-7 Municipal GHG Reduction Strategies and Emission Reductions

Goal and Measure	2020 Emission Reductions (MT CO ₂ e)	2035 Emission Reductions (MT CO ₂ e)
Goal M-1: Education, Outreach, and Planning Efforts for Energy Efficiency		
M-1.1: Increase Energy Savings through the SDG&E Energy Efficiency Partnership	Supporting Measure	
Goal M-2: Increase Energy Efficiency in Municipal Buildings		
M-2.1: Conduct Municipal Energy Audit	Supporting Measure	
M-2.2: Procurement Policy for Energy Efficient Equipment	19	19
M-2.3: Install Cool Roofs	Tracking Data	
M-2.4: Retrofit HVAC and Water Pump Equipment	12	12
Goal M-3: Increase Energy Efficiency in Community Buildings and Infrastructure		
M-3.1: Traffic Signal and Outdoor Lighting Retrofits	212	421
M-3.2: Upgrade or Incorporate Water-Conserving Landscape	Supporting Measure	
M-3.3: Plant Trees for Shade and Carbon Sequestration	Supporting Measure	
Goal M-4: On-Road Energy Efficiency Enhancements; Employee Commute and Vehicle Fleet		
M-4.1: Employee Carpools	6	14
M-4.2: Purchase of Hybrid or Electric Vehicles	5	11
M-4.3: Replace and/or Supplement Vehicle Fleet with Hybrid/Electric Vehicles	7	16
M-4.4: Install E-Vehicle Chargers	Supporting Measure	
Goal M-5: Reduce Energy Consumption in the Long Term		
M-5.1: Ongoing Actions and Projected Reductions	-	558
Total Municipal Measures		
Total of all Measures listed above	260	1,050

Notes and Acronyms:

BAU = Business as Usual

MT CO₂e = metric tons of carbon dioxide equivalent

ADAPTATION

The City recognizes that planning sustainably is more than reducing GHG emissions; it also requires being prepared for changes that would impact the community’s quality of life, its use of resources, and its economy. Preparedness, or adaptation, efforts seek to reduce vulnerability and increase the local capacity to adapt to changes. The City may expect increased temperatures, variable precipitation, and increased extreme weather events. The City has developed adaptation strategies to reduce potential impacts or to build resiliency to impacts. The strategies focus on public health and safety, electrical demand, water availability, infrastructure damage, wildfire, and social equity.



IMPLEMENTATION

Finally, the Sustainable Santee Plan in itself is not enough to meet the reduction goals without a commitment to implementation. The Implementation Chapter of the Sustainable Santee Plan identifies the process for implementing and monitoring the strategies described. The six step process is summarized in FIGURE ES-6.



FIGURE ES-6 Process of Implementing the Sustainable Santee Plan

Through successful implementation of this Sustainable Santee Plan, the City will demonstrate the potential economic, social, and environmental benefits of reducing GHG emissions and providing environmental stewardship within the community.



CHAPTER I Introduction

The City of Santee (City) is committed to planning sustainably for the future while ensuring a livable,

PURPOSE
<p>The Sustainable Santee Plan has four primary purposes or goals:</p> <ol style="list-style-type: none">1. Present the City’s plan for achieving sustainability by utilizing resources efficiently, reducing greenhouse gas emissions, and preparing for potential climate-related impacts.2. Identify how the City will effectively implement this Sustainable Santee Plan by obtaining funding for program implementation and tracking and monitoring the progress of Plan implementation over time.3. Allow streamlined CEQA compliance for new development by preparing an Environmental Impact Report for the Plan and developing screening tools that provide clear guidance to developers and other project proponents.4. Maintain economic competitiveness within the region.

equitable, and economically vibrant community. Planning sustainably includes acknowledging the local role in climate change and how the City can mitigate their emissions and prepare for (i.e., adapt to) anticipated climate-related changes. By using energy more efficiently, harnessing renewable energy to power buildings, recycling waste, and enhancing access to sustainable transportation modes, the City can keep dollars in its local economy, create new green jobs, and improve the community’s health, safety, and welfare in addition to addressing climate change. To that end, the City has implemented a number of sustainability and conservation efforts and seeks to continue those efforts through local planning and partnerships. The Sustainable Santee Plan integrates the City’s past and current efforts with future efforts to grow and

thrive sustainably.



CLIMATE CHANGE SCIENCE

Climate change is a term used to describe large-scale shifts in historically observed patterns in earth's climate system. Although the climate has historically responded to natural drivers, recent climate change has been unequivocally linked to increasing concentrations of greenhouse gases (GHGs) in earth's atmosphere.

Gases that trap heat in the atmosphere are called greenhouse gases because they transform the light of the sun into heat, similar to the glass walls of a greenhouse. Human-generated GHG emissions significantly contribute to the changes in the global climate, which have a number of physical and environmental effects. Effects associated with global climate change include sea level rise, increase in frequency and intensity of droughts, and increased temperature. Increased GHG emissions are largely the result of increasing energy consumption, particularly through the combustion of fossil fuels.

The Intergovernmental Panel on Climate Change (IPCC) assesses scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC identifies six key GHG compounds: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and hydrofluorocarbons (HFC). Each GHG has a different capacity to trap heat and therefore GHG emissions are generally reported in metric tons (MT) of carbon dioxide equivalents (CO₂e). Non-CO₂ emissions are converted to a CO₂e using each GHG's Global Warming Potential (GWP). IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalents (CO₂e), which compares the gas in question to that of the same mass of CO₂ (CO₂ has a GWP of 1 by definition). Common greenhouse gases included in the Plan are CO₂, CH₄, and N₂O which are the GHGs that most commonly result from human activities, and are detailed below.

Carbon Dioxide is the most important anthropogenic GHG and accounts for more than 75 percent of all GHG emissions caused by humans. Its atmospheric lifetime of 50–200 years ensures that atmospheric concentrations of CO₂ will remain elevated for decades, even after mitigation efforts to reduce GHG concentrations are implemented. The primary sources of anthropogenic CO₂ in the atmosphere include the burning of fossil fuels (including motor vehicles), gas flaring, cement production, and land use changes (e.g., deforestation, oxidation of elemental carbon). CO₂ can be removed from the atmosphere by photosynthetic organisms (e.g., plants and certain bacteria). Atmospheric CO₂ has increased from a preindustrial concentration of 280 parts per million (ppm) to 397 ppm in 2014.¹

Methane (CH₄), the main component of natural gas, is the second most abundant GHG and has a GWP of 25. Sources of anthropogenic emissions of CH₄ include using natural gas, burning fossil fuels, landfill outgassing, certain agricultural practices, and mining coal. Certain land uses also function as both a source and sink for CH₄. For example, the primary terrestrial source of CH₄ are

¹ NOAA, Annual Greenhouse Gas Index (AGGI), <http://www.esrl.noaa.gov/gmd/aggi/aggi.fig2.png> (accessed March 19, 2015).



wetlands, whereas undisturbed, aerobic soils act as a CH₄ sink (i.e., they remove CH₄ from the atmosphere). Atmospheric CH₄ has increased from a pre-industrial concentration of 715 parts per billion (ppb) to 1,820 ppb in 2014.²

Nitrous Oxide (N₂O) is a powerful GHG, with a GWP of 298. Anthropogenic sources of N₂O include combustion of fossil fuels, agricultural processes (e.g., fertilizer application), and nylon production. In the United States more than 70 percent of N₂O emissions are related to agricultural soil management practices, particularly fertilizer application. N₂O concentrations in the atmosphere have increased nearly 21 percent, from pre-industrial levels of 270 ppb to 326 ppb in 2014.³

BENEFITS OF THE PLAN

This Plan, while addressing climate change, also benefits the City in many direct ways.

- **Local Control**—This Plan allows the City to identify strategies to reduce resource consumption, costs, and GHG emissions in all economic sectors in a way that maintains local control over the issues and fits the character of the community. It also may position the City for funding to implement programs tied to climate goals.
- **Energy and Resource Efficiency**—This Plan identifies opportunities for the City to increase energy efficiency and lower GHG emissions in a manner that is most feasible in the community. Reducing energy consumption through increasing the efficiency of energy technologies, reducing energy use, and using alternative sustainable sources of energy are effective ways to reduce GHG emissions. Energy efficiency also provides opportunities for cost-savings.
- **Increased Public Health**—Many of the GHG reduction strategies identified in this Plan also have local public health benefits. Benefits include local air quality improvements; creating a more active community through implementing sustainable living practices; and reducing health risks, such as heat stroke, elevated by climate change impacts such as increased extreme heat days.
- **Demonstrating Consistency with State GHG Reduction Goals**—A GHG reduction plan may be used as GHG mitigation in a General Plan to demonstrate that the City is aligned with state goals for reducing GHG emissions to a level considered less than cumulatively considerable.
- **Meeting California Environmental Quality Act Requirements**—California Environmental Quality Act (CEQA) requires impacts from GHG emissions to be reviewed. A qualified GHG reduction plan may be used in future development projects as the GHG analysis for their CEQA document, resulting in greater certainty for developers and cost-effectiveness for developers and City staff.

² NOAA, Annual Greenhouse Gas Index (AGGI), <http://www.esrl.noaa.gov/gmd/aggi/aggi.fig2.png> (accessed March 19, 2015).

³ Ibid.



REGULATORY SETTING

In an effort to stabilize GHG emissions and reduce impacts associated with climate change, international agreements, as well as federal and state actions were implemented beginning as early as 1988. The government agencies discussed below work jointly, as well as individually, to address GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs.

Federal

Clean Air Act

In 2007, through *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007), the United States Supreme Court held that the United States Environmental Protection Agency (USEPA) has authority to regulate GHGs from new motor vehicles as pollutants under Section 202(a)(1) of the federal Clean Air Act in the event that it forms a judgment that such emissions contribute to climate change. EPA can avoid taking regulatory action only if it determines that greenhouse gases do not contribute to climate change, or if it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do.

State

California Air Resources Board Standards and Programs

The California Air Resources Board (CARB), a part of the California EPA (Cal/EPA) is responsible for the coordination and administration of both federal and state air pollution control and climate change programs within California. In this capacity, CARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. The California Health and Safety Code, Section 38561(h) requires CARB to update the State's scoping plan for achieving the maximum technologically feasible and cost effective reductions of GHG emission at least once every 5 years.

Executive Order S-3-05

On June 1, 2005, California Governor Arnold Schwarzenegger announced through Executive Order S-3-05, the following GHG emissions targets:

- By 2010, California shall reduce GHG emissions to 2000 levels
- By 2020, California shall reduce GHG emissions to 1990 levels
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels

The EO S-3-05 also laid out responsibilities among the state agencies for implementation and for reporting on progress toward the targets.



Executive Order B-30-15

On April 29, 2015, California Governor Jerry Brown announced through Executive Order B-30-15, the following GHG emissions target:

- By 2030, California shall reduce GHG emissions to 40 percent below 1990 levels

The emission reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to make it possible to reach the ultimate goal of reducing emissions 80 percent under 1990 levels by 2050. The order directs the California Air Resources Board to provide a plan with specific regulations to reduce Statewide sources of GHG emissions. The Executive Order does not include a specific guideline for local governments.

Assembly Bill 1493, Clean Car Standards

Known as “Pavley I,” Assembly Bill (AB) 1493 standards were the nation’s first GHG standards for automobiles. AB 1493 requires CARB to adopt vehicle standards that will lower GHG emissions from new light-duty autos to the maximum extent feasible. In January 2012, the CARB adopted the Advanced Clean Cars Program to achieve additional GHG emission reductions for passenger vehicles for model years 2017–2025. The Program includes low-emission vehicle (LEV) regulations and zero-emission vehicle regulations. Together, the two standards are expected to increase average fuel economy to roughly 43 miles per gallon by 2020 (and more for years beyond 2020).

Assembly Bill 32, the California Global Warming Solutions Act of 2006

AB 32 requires CARB to reduce Statewide GHG emissions to 1990 level by 2020. As part of this legislation, CARB was required to prepare a “Scoping Plan” that demonstrates how the State will achieve this goal. The Scoping Plan was adopted in 2011 and in it, local governments were described as “essential partners” in meeting the Statewide goal, recommending a GHG reduction level 15 percent below 2005–2008 levels, depending on when a full emissions inventory is available, by 2020.

CARB released the 2017 Scoping Plan Update on January 20, 2017. The 2017 Scoping Plan Update provides strategies for achieving the 2030 target established by Executive Order B-30-15 and codified in Senate Bill (SB) 32 (40 percent below 1990 levels by 2030). The 2017 Scoping Plan Update recommends local plan level GHG emissions reduction goals. CARB recommends that local governments aim to achieve emissions of no more than 6 metric tons (MT) of CO₂e per capita by 2030 and no more than 2 MTCO₂e per capita by 2050.

Assembly Bill 341 (Commercial Recycling)

AB 341 sets a Statewide goal of 75 percent recycling, composting, or source reduction of solid waste by the year 2020. As required by AB 341, the California Department of Resources Recycling and Recovery (CalRecycle) adopted the Mandatory Commercial Recycling Regulation on January 17, 2012. The regulation was approved by the Office of Administrative Law on May 7, 2012. It became effective immediately and clarifies the responsibilities in implementing mandatory commercial recycling. The Mandatory Commercial Recycling Regulation focuses on increased commercial waste



diversion as a method to reduce GHG emissions. The regulation is designed to achieve a reduction in GHG emissions of 5 million MT of carbon dioxide, which equates to roughly an additional 2 to 3 MT of currently disposed commercial solid waste being recycled by 2020 and thereafter.

Senate Bill 97

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. The legislation directed the California Office of Planning and Research to develop draft CEQA Guidelines “for the mitigation of GHG emissions or the effects of GHG emissions” and directed the Resources Agency to certify and adopt the State CEQA Guidelines. CEQA Guidelines Section 15183.5, Tiering and Streamlining the Analysis of GHG Emissions, was added as part of the CEQA Guideline amendments that became effective in 2010 and describes the criteria needed in a GHG reduction plan that would allow for the tiering and streamlining of CEQA analysis for development projects.

Executive Order S-1-07, Low Carbon Fuel Standard

California Executive Order S-01-07 mandates (1) that a Statewide goal be established to reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020, and (2) that a low carbon fuel standard (LCFS) for transportation fuels be established in California. CARB developed the LCFS regulation pursuant to the authority under AB 32 and adopted it in 2009.

Executive Order S-13-08, The Climate Adaptation and Sea Level Rise Planning Directive

Executive Order S-13-08 provides clear direction for how the state should plan for future climate impacts. Executive Order S-13-08 calls for the implementation of four key actions to reduce the vulnerability of California to climate change:

- Initiate California's first Statewide Climate Adaptation Strategy that will assess the state's expected climate change impacts, identify where California is most vulnerable, and recommend climate adaptation policies.
- Request that the National Academy of Sciences establish an expert panel to report on sea level rise impacts in California in order to inform state planning and development efforts.
- Issue interim guidance to state agencies for how to plan for sea level rise in designated coastal and floodplain areas for new and existing projects.
- Initiate studies on critical infrastructure and land-use policies vulnerable to sea level rise.

California Code of Regulations Title 24, Part 6

California Code of Regulations (CCR) Title 24, Part 6 (California’s Energy Efficiency Standards for Residential and Nonresidential Buildings) (Title 24), was established in 1978 to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels and natural gas use result in



GHG emissions and energy efficient buildings require less electricity and natural gas. Therefore, increased energy efficiency results in decreased GHG emissions.

The California Energy Commission (CEC) adopted 2008 Standards on April 23, 2008, in response to AB 32. The Standards were adopted to provide California with an adequate, reasonably priced, and environmentally sound supply of energy; to pursue California energy policy, which states that energy efficiency is the resource of first choice for meeting California's energy needs; to meet the West Coast Governors' Global Warming Initiative commitment to include aggressive energy efficiency measures into updates of state building codes every three years; and to meet the Executive Order in the Green Building Initiative to improve the energy efficiency of nonresidential buildings through aggressive standards. The latest update of CCR Title 24, Part 6 went into effect January 1, 2017, which significantly increases the energy efficiency of new residential buildings.

Senate Bill 375, Sustainable Communities Strategy

SB 375 provides for a new planning process that coordinates land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans, developed by metropolitan planning organizations to incorporate a sustainable communities strategy (SCS) in their regional transportation plans (RTPs). The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. SB 375 also includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development.

CALGreen Building Code

CCR Title 24, Part 11 (California's Green Building Standard Code [CALGreen]), was adopted in 2010 and went into effect January 1, 2011. CALGreen is the first Statewide mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California. The mandatory provisions in CALGreen will reduce the use of volatile organic compounds (VOC) emitting materials, strengthen water conservation, and require construction waste recycling. The most recent version of CalGreen became effective January 1, 2017.

SB x7-7

SB x7-7 requires water suppliers to reduce urban per capita water consumption 20 percent from a baseline level by 2020.

Renewable Portfolio Standard

The Renewable Portfolio Standard requires energy providers to derive 33 percent of their electricity from qualified renewable sources by 2020, 60 percent by 2030, and 100 percent by 2045. This is anticipated to lower emission factors (i.e., fewer GHG emissions per kilowatt-hour used) from utilities across the state, including San Diego Gas & Electric (SDG&E).



CITY SETTING

The City is located in eastern San Diego County, at the eastern end of the San Clemente Canyon Freeway (State Route 52), bordering Mission Trails Regional Park and Marine Corps Air Station (MCAS) Miramar to the west, the unincorporated community of Lakeside to the north and east, and the unincorporated community of Bostonia and the City of El Cajon to the south. Approximately half of the City's land is undeveloped, with opportunity for growth. The City's extensive open space and proximity to nearby lakes offers a diverse environment of both urban and country qualities compared to many of San Diego County's larger, more developed cities.

The City of Santee is a community of approximately 58,000 residents. The City's population is diverse in age. The City's ethnicity is approximately 74 percent White, 16 percent Latino, 7 percent other ethnicities, and 7 percent two or more races. The City has nearly 20,000 households, with half being single-family detached units, a quarter as multifamily units, and the remaining as single-family multiunit, mobile home, and other units.

PLAN STRUCTURE

The Sustainable Santee Plan is divided into the following chapters

- **Chapter 2** summarizes the City's historic and future GHG emissions and the reduction targets the City has established.
- **Chapter 3** details the reduction strategies that will be implemented to meet the reduction targets identified in Chapter 2. Measures also include the potential energy savings and local co-benefits of the measures.
- **Chapter 4** discusses how the City may be impacted by climate change and how the City can adapt and become more resilient to climate change effects.
- **Chapter 5** includes the implementation of the measures, potential funding sources, and how the Plan will be monitored and updated over time. It also summarizes the outreach and CEQA review process conducted as part of this Plan.

Under Section 15183.5 of the CEQA Guidelines, a plan to reduce GHG emissions should:

- (A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- (B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable; (**Chapter 2/3**)
- (C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- (D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- (E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels; and
- (F) Be adopted in a public process following environmental review.



CHAPTER 2 Energy and GHG Emissions Inventory, Forecast, and Targets

GHG EMISSIONS INVENTORY

GHG emissions inventories are the foundation of planning for future reductions. Establishing an inventory of emissions helps to identify and categorize the major sources of emissions produced over a single calendar year. Jurisdictions often prepare emissions inventories for the community and municipal operations. A community inventory includes GHG emissions that result from the activities by residents and businesses in the City and a municipal inventory includes GHG emissions that result from the activities performed as part of the government operations in the City and are a subset of the community inventory. The inventories identify the major sources of GHGs emissions caused by activities in sectors that are specific to community or municipal activities.

The City prepared community inventories for the years 2005, 2008, 2012, and 2013, and municipal inventories for the years 2005 and 2013. The 2005 inventory (for both community and municipal operations) is considered the baseline year. A baseline year is established as a starting point against which other inventories may be compared and targets may be set, and is generally the earliest year with a full emissions inventory. The year of 2005 was considered the baseline year because it was the earliest year with a full emissions inventory for the City, and it met the need of setting emissions reduction targets based on 2005 to 2008 emission levels according to the Scoping Plan. The most



recent inventory has the most relevant data for planning purposes, while interim years provide context and may help identify trends or anomalies in the community emissions. The sectors evaluated in each inventory are provided in TABLE 1. The City prepared a detailed GHG Inventories, Long-Term Forecasts, and Target-Setting (IFT) Report, included as Appendix A, which contains detailed methodology of the information summarized in this chapter. Data were calculated and managed to best fit the GHG inventory and planning software tool used for this project, called ClearPath. ClearPath was developed by the Statewide Energy Efficiency Collaborative, which is a partnership among several Statewide agencies, utilities, and non-profits to assist cities and counties in climate mitigation planning. The ClearPath Tool is an all-in-one suite of online tools to help local agencies complete government operations and community-wide GHG inventories, forecasts, and climate action plans. Appendix B contains input and output data from the ClearPath Tool for the City’s GHG emissions inventory and forecasts.

TABLE 1 Community and Municipal Sectors Evaluated in the Inventories

Community Sectors	Municipal Sectors
<ul style="list-style-type: none"> ■ Residential Energy ■ Commercial/Industrial Energy ■ On-road Transportation ■ Solid Waste ■ Water ■ Wastewater ■ Off-road Sources 	<ul style="list-style-type: none"> ■ Building and Facilities Energy ■ Outdoor Lights and Streetlights ■ Water Pumping and Delivery ■ Fleet and Equipment ■ Employee Commute ■ Solid Waste

2005–2013 Community Emissions Summary

Emissions increased 18 percent from 2005 to 2013, from 339,972 MT CO₂e to 402,574 MT CO₂e, with On-Road Transportation emissions showing the greatest overall increase. As shown in FIGURE 1 and TABLE 2, the Transportation sector, including on-road and off-road emissions, was the largest contributor to emissions in all four inventory years.

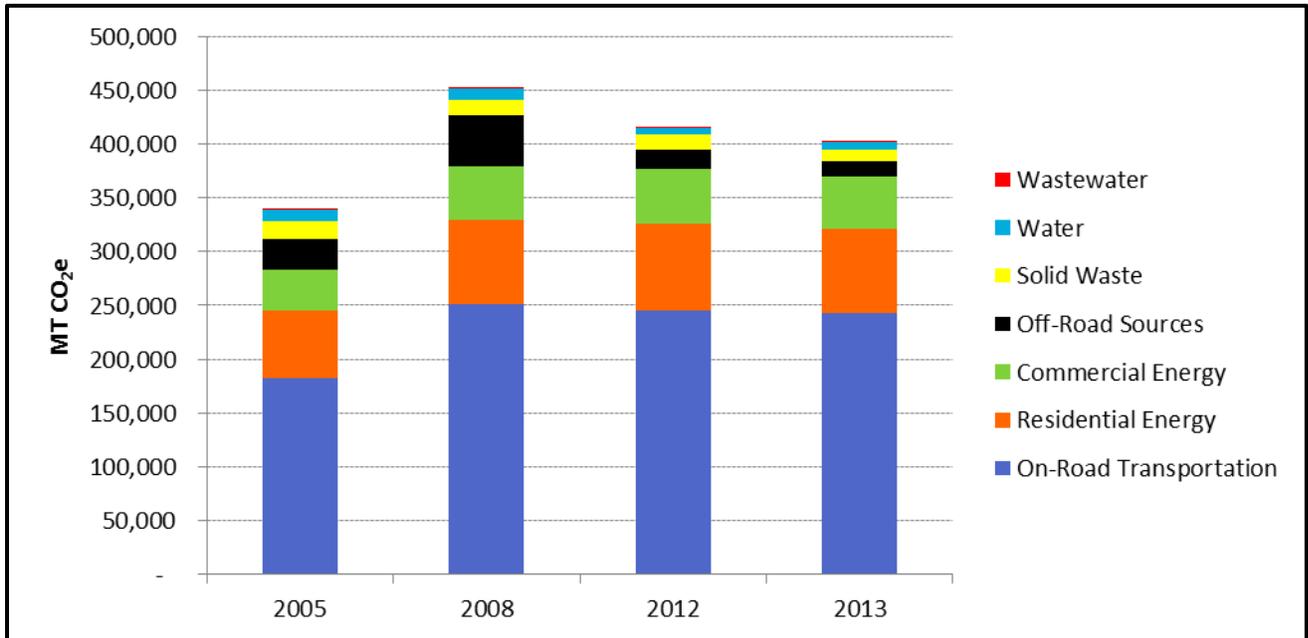


FIGURE 1 Community GHG Emissions by Sector for 2005, 2008, 2012, and 2013

TABLE 2 Communitywide GHG Emissions by Sector for 2005 and 2013

Sector	2005 (MT CO ₂ e)	2013 (MT CO ₂ e)	% Change 2005–2013
On-Road Transportation	181,812	242,499	33.4%
Residential Energy	63,544	78,651	23.8%
Commercial Energy	37,697	48,025	27.4%
Solid Waste	16,376	11,151	-31.9%
Water	11,354	6,578	-42.1%
Off-Road Sources	28,230	14,699	-47.9%
Wastewater	959	971	1.3%
Total	339,972	402,574	18.4%

Note: ¹ Vehicle Miles Traveled was modeled with SANDAG Series 12 (2008 Baseline Year) model. On-Road Transportation Emission Factors were derived from EMFAC2014.

Community Emissions by Energy

Energy is an area over which local agencies often have the greatest opportunities for affecting change. In Santee, energy use has largely declined, although emissions have increased, reflecting the increase in emissions to produce a kilowatt-hour (kWh) of electricity in SDG&E territory.⁴

⁴ As described in the IFT Report, emissions from electricity generation are variable, depending on the source of generation. SDG&E’s energy portfolio for electricity increased from 550 pounds (lbs) CO₂e per megawatt hour (MWh) in 2005 to 781 lbs CO₂e per MWh in 2013. Therefore, a decrease in electricity use can still result in an increase in emissions, as occurred in the City.



Therefore, electricity and natural gas use remains a key area for reduction opportunities. Emissions from energy use account for 54 percent of total community emissions in 2013. **FIGURE 2** FIGURE 2 shows the trend in electricity and natural gas emissions from 2005 to 2013 for the Commercial and Residential sectors. TABLE 3 includes the activity data and GHG emissions for 2005 and 2013.

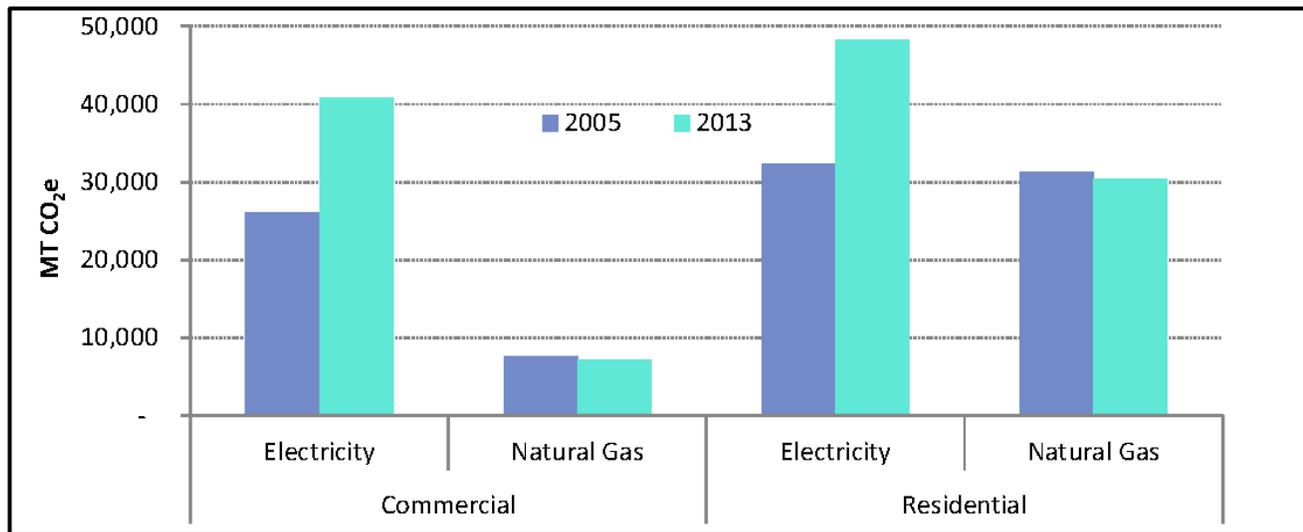


FIGURE 2 GHG Emissions for Community Electricity and Natural Gas, by Sector

TABLE 3 Community Activity Data and GHG Emissions for Energy in 2005 and 2013

Sector	2005		2013		Percent Change in Activity 2005–2013	Percent Change in Emissions 2005–2013
	Activity (kWh or therms)	Emissions (MT CO ₂ e)	Activity (kWh or therms)	Emissions (MT CO ₂ e)		
Commercial/Industrial						
Electricity	120,725,233	26,127	115,339,581	40,860	-4.5%	56.4%
Natural Gas	1,419,790	7,550	1,347,484	7,165	-5.1%	-5.1%
Residential						
Electricity	129,290,439	32,286	136,108,148	48,218	5.3%	49.3%
Natural Gas	5,878,287	31,258	5,723,205	30,433	-2.6%	-2.6%
Total (MT CO₂e)		97,221		126,676		30.3%

2005–2013 Municipal Emissions Summary

Emissions from municipal activities increased 15 percent from 2005 to 2013, from 1,657 MT CO₂e to 1,909 MT CO₂e. Emissions from City-owned outdoor lights increased the most (297 MT CO₂e between 2005 and 2013), followed by Buildings and Facilities, which increased emissions by 71 MT CO₂e (FIGURE 3 and TABLE 4). Emissions decreased in two sectors, SDG&E-owned outdoor lights and



employee commute. The decrease in employee commute emissions could be due to a decrease in staff.

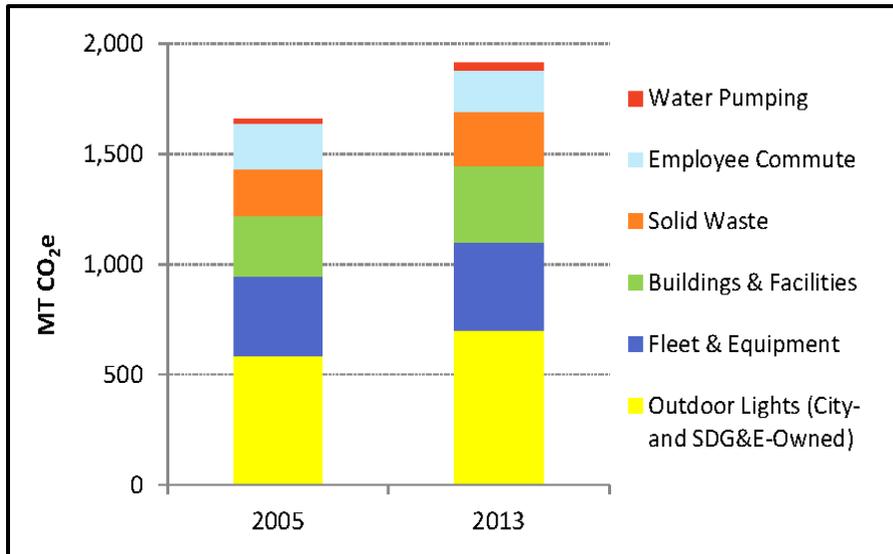


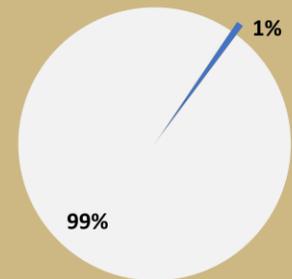
FIGURE 3 Municipal GHG Emissions by Sector for 2005 and 2013

TABLE 4 Municipal GHG Emissions by Sector for 2005 and 2013

Sector	2005 (MT CO ₂ e)	2013 (MT CO ₂ e)	% Change 2005 – 2013
Outdoor Lights — SDG&E-Owned	433	252	-42%
Fleet and Equipment	359	396	10%
Buildings and Facilities	275	346	26%
Solid Waste	210	247	18%
Employee Commute	208	188	-10%
Outdoor Lights—City-Owned	153	450	194%
Water Pumping	19.0	30.0	58%
Total	1,657	1,909	15%

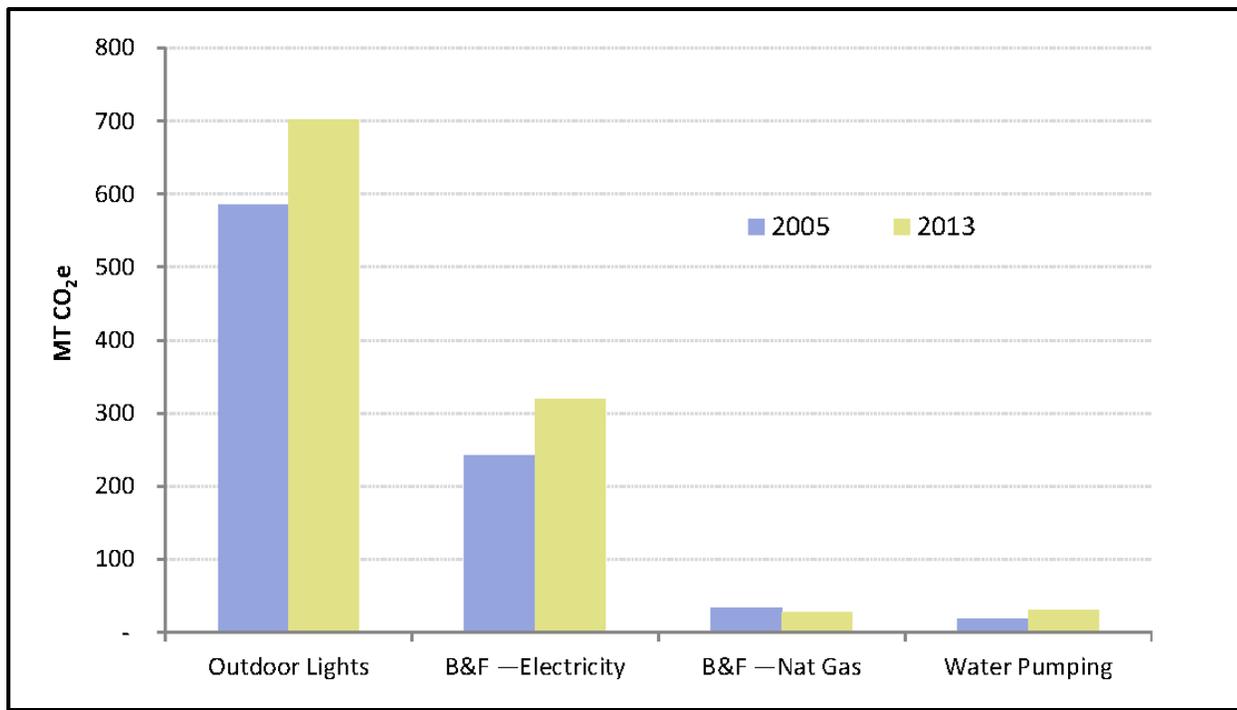
Municipal Emissions

Municipal emissions account for 1% of total community emissions. However, municipal emissions are more directly controllable by the City and can be used to showcase sustainability efforts in the community.



Municipal Emissions by Energy

As with the community energy, municipal energy use decreased, but due to the emission factors for electricity, the GHG emissions increased from 2005 to 2013. Municipal energy use includes buildings and facilities (electricity and natural gas), outdoor lights, and water pumping. FIGURE 4 shows the trend in electricity and natural gas emissions from 2005 to 2013 for the municipal energy sectors.



NOTE: B&F = Buildings and Facilities

FIGURE 4 GHG Emissions for Municipal Electricity and Natural Gas by Sector

INVENTORY FORECAST

Forecasting future GHG emissions allows the City to understand how emissions are expected to increase or decrease in the future. Major changes in growth or land uses may affect how to best plan to reduce emissions in the future. GHG emissions are forecast using two scenarios: a Business-as-Usual (BAU) and an Adjusted BAU scenario. The BAU scenario describes emissions based on projected growth in population and employment and does not consider policies that will reduce emissions in the future (that is, the policies and related efficiency levels in place in 2013 are assumed to remain constant through 2035). Projected growth is estimated using data from regional planning scenarios developed by the San Diego Association of Governments (SANDAG) and the City. To facilitate the Plan’s long-term applicability, the forecast for households in 2035 includes a 2,000 household buffer above the build out accommodated by the City’s currently adopted General Plan. Growth calculation and methods are detailed in the IFT Report located in Appendix A. In general, the City is expecting modest growth to 2020 and 2035 as population, housing, and jobs are all expected to increase. The City expects its municipal services to increase slightly over time. TABLE 5 shows the growth projections used to develop the emissions forecasts.



TABLE 5 Growth Indicators for 2013, 2020, and 2035

Sector	Demographic Indicator	2013	2020	2035
Solid Waste, Water, Wastewater, Off-Road Sources	Service Population (Population + Jobs)	71,663	76,437	84,200
Population ^a	Population	55,033	59,488	63,518
Residential Energy	Households	19,725	20,995	24,165
Commercial/Industrial Energy	Jobs	16,630	16,949	20,682
Transportation ^b	VMT – Gas	458,785,827	493,494,150	576,966,520
	VMT – Diesel	27,822,637	32,536,348	45,500,895
Municipal Jobs (FTE)	Municipal Emissions ^c	112.8	115	120

SOURCE: SANDAG

FTE = Full-time equivalent employees

- a. Population data are shown for informational purposes but are not used for forecasting any sector.
- b. 2020 VMT is derived from the compound annual growth rate between 2013 and 2035.
- c. The number of jobs in the City is used as an indicator for all municipal operation emissions.

The Adjusted BAU scenario describes emissions based on projected growth *and* considers policies that will achieve GHG reductions in the future. Policies, described in the Regulatory Setting section of Chapter 1, include State-adopted or approved legislation that will affect future emissions. By evaluating the two scenarios, the City can see the effect that existing policies may have on future emissions and be better able to determine how local measures can provide additional reductions.

Three future years are forecasted for each scenario: 2020, 2030 and 2035. The 2020 forecast year is consistent with the goals identified in AB 32, which identifies a Statewide GHG reduction target by 2020. The 2030 forecast year is consistent with the goals identified in 2017 Scoping Plan Update, which recommends a per capita GHG reduction target by 2030. The 2035 forecast year was chosen to be consistent with the horizon year of the Santee General Plan Mobility Element and will allow the City to develop long-term strategies to continue GHG reductions beyond 2030 towards the 2050 State target.

Business-as-Usual Forecasts

Community Business-as-Usual Forecast

The City’s BAU emissions in 2020 are estimated to be 432,982 MT CO₂e, or a 27 percent increase from baseline (2005) emissions. The 2030 BAU emissions are estimated to be 486,170 MT CO₂e, or a 43 percent increase from 2005 level. By 2035, emissions are estimated to increase 51.6 percent from the baseline level to 515,462 MT CO₂e (FIGURE 5).

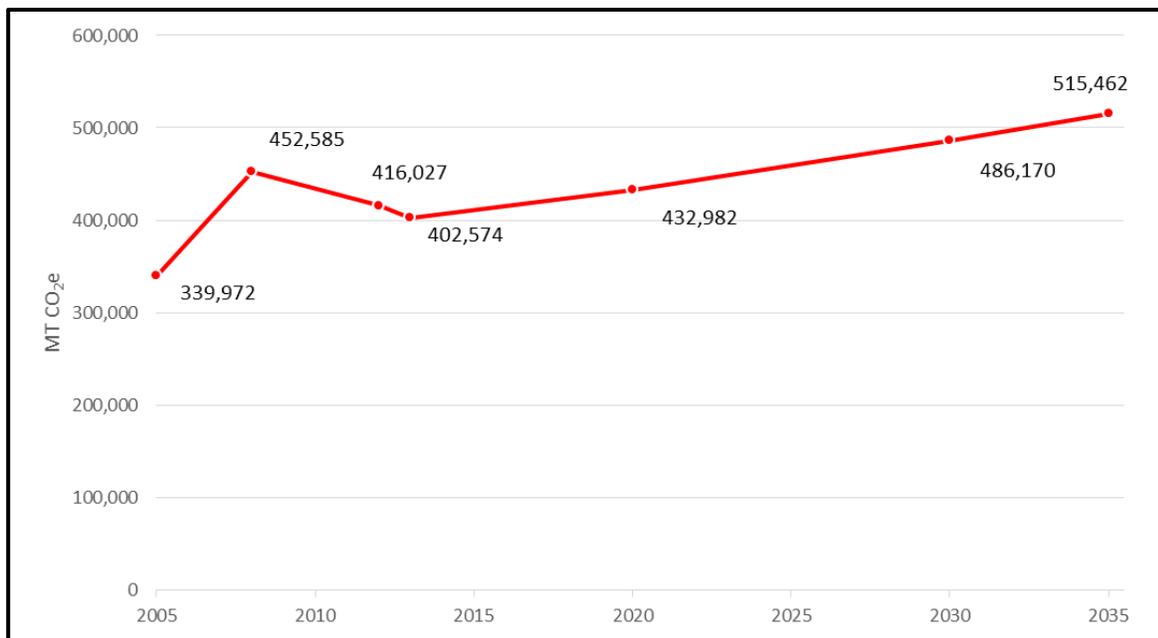


FIGURE 5 Community BAU Forecast

Municipal Business-as-Usual Forecast

The City anticipates approximately 2 percent growth in emissions from City services by 2020, 5 percent by 2030, and 6 percent by 2035, relative to 2013 levels. However, emission levels are expected to be 18 percent, 21 percent, and 23 percent higher, respectively, due to the higher electricity emission factor assumed under a BAU forecast compared to the 2005 factor as described in FIGURE 6.

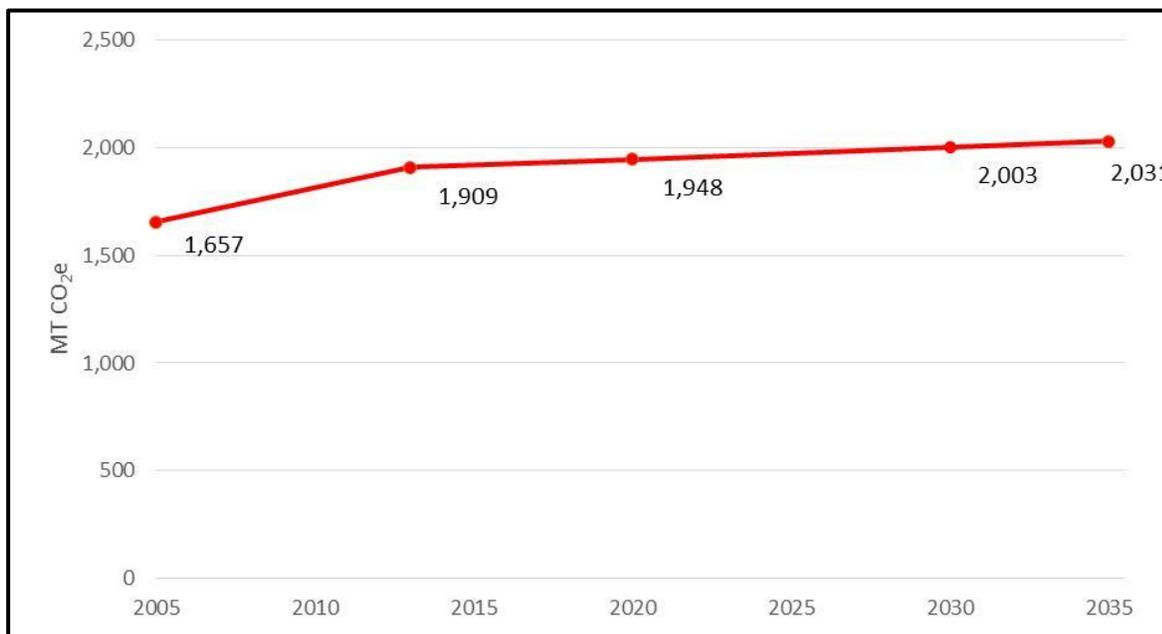


FIGURE 6 Municipal BAU Forecast



Adjusted Business-as-Usual Forecasts

Community Adjusted Business-as-Usual Forecast

The City’s Adjusted BAU emissions are estimated to be 352,106 MT CO₂e in 2020, 339,514 MT CO₂e in 2030, and 336,543 MT CO₂e in 2035 (FIGURE 7). This change represents a 3.6 percent increase from 2005 by 2020, 0.1 percent reduction by 2030, and 1.0 percent reduction by 2035.

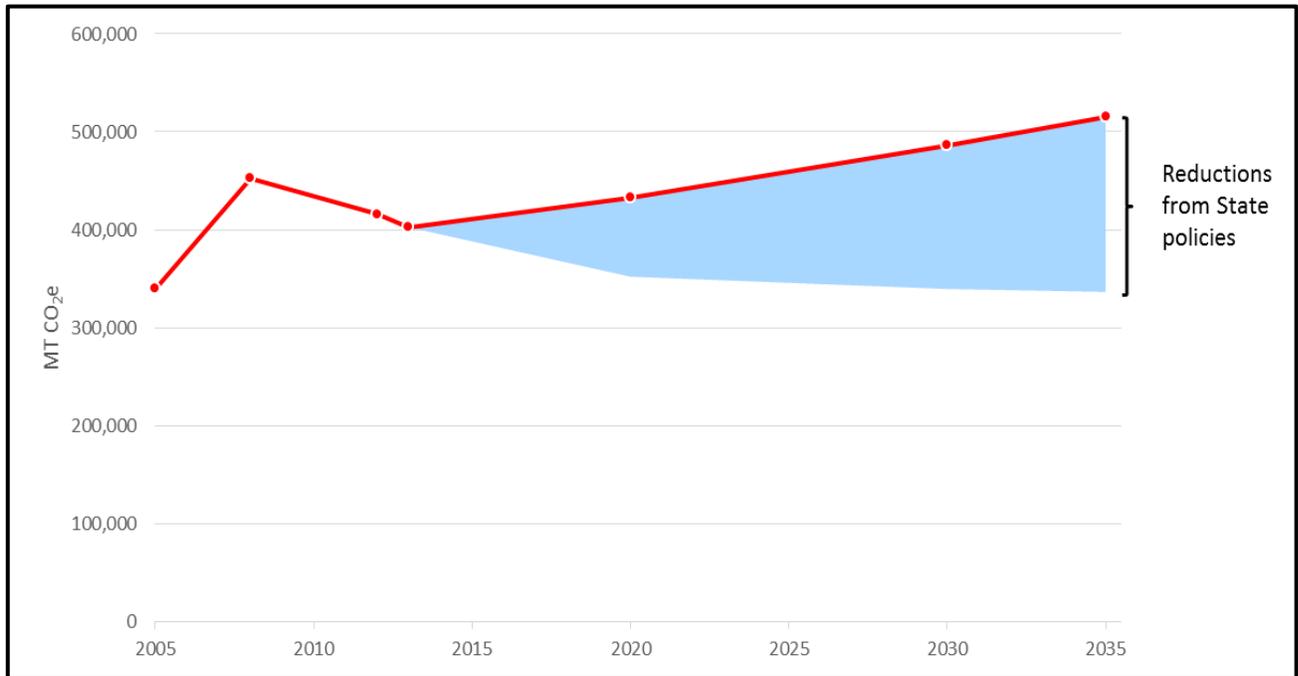


FIGURE 7 Community Adjusted BAU Emissions

Municipal Adjusted Business-as-Usual Forecast

The City’s Municipal Adjusted BAU emissions in 2020 are estimated to be 1,611 MT CO₂e, which is 3 percent lower than the 2005 baseline level (FIGURE 8). In 2030, emissions are expected to be 1,657 MT CO₂e, which is equivalent to 2005 levels. In 2035, emissions are expected to be 1 percent higher than in 2005 (1,681 MT CO₂e).

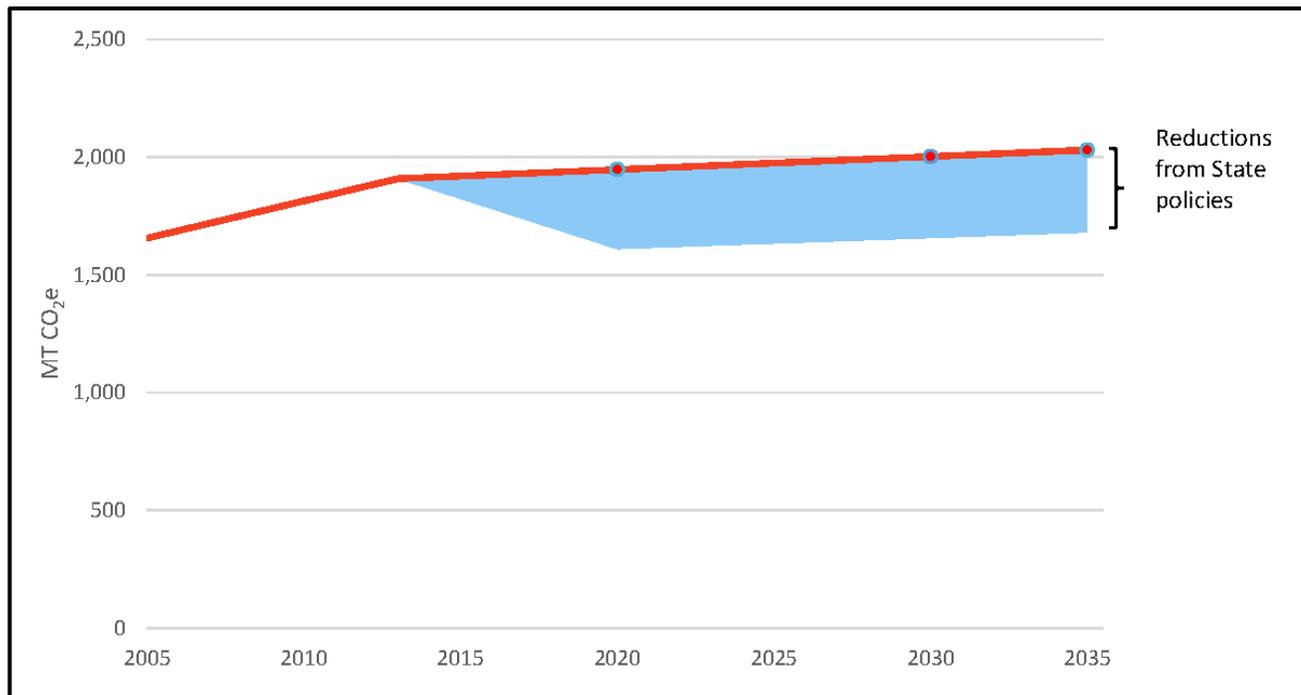


FIGURE 8 Municipal Adjusted BAU Emissions

REDUCTION TARGETS

The State has set goals for reducing GHG emissions by 2020 and 2050 through AB 32 and Executive Order (EO) S-3-05, respectively. The State has also provided guidance to local jurisdictions as “essential partners” in achieving the State’s goals by identifying a 2020 recommended reduction goal. That goal, stated in the AB 32 Scoping Plan, was for local governments to achieve a 15 percent reduction below 2005 levels by 2020, which aligns with the State’s goal of not exceeding 1990 emissions levels by 2020.⁵ Beyond 2020, AB 32 states that the emissions level in 2020 should be maintained post-2020 and Executive Order S-03-05 states that emissions should decline to 80 percent below 1990 levels by 2050.

The 2017 Scoping Plan Update released by ARB in January 2017 provides strategies for achieving the 2030 target established by Executive Order B-30-15 and codified in SB 32 (40 percent below 1990 levels by 2030). The 2017 Scoping Plan Update recommends local plan level GHG emissions reduction goals. ARB recommends that local governments aim to achieve community-wide goal to achieve emissions of no more than 6 MT CO₂e per capita by 2030 and no more than 2 MT CO₂e per capita by 2050.

⁵ The State concluded that a 15 percent reduction in emissions from 2005 levels by 2020 would be equivalent to achieving 1990 emissions levels.



Both mass emissions (performance target) and per capita emissions (efficiency target) GHG reductions targets were identified for 2020, 2030, and 2035. The City has established the following reduction targets that are consistent with current regulation.

Community Targets

Mass Emissions Targets

Consistent with the State’s adopted AB 32 GHG reduction target, the City has set a goal to reduce emissions to 1990 levels by 2020. This target was calculated as a 15-percent decrease from 2005 levels, as recommended in the AB 32 Scoping Plan. An interim goal for the City was created for 2030, which was to reduce emissions to 40 percent below 2005 levels. A longer-term goal was established for 2035, which was to reduce emissions to 49 percent below 2005 levels. The 2030 interim and 2035 longer-term goals would put the City on a path toward the State’s long-term goal to reduce emissions 80 percent below 1990 levels by 2050 (TABLE 6).

TABLE 6 Mass GHG Reduction Targets for Community Emissions

	Community Target
2020 Target	15% below 2005 levels
2020 Emissions Goal (MT CO ₂ e)	288,976
2030 Target	40% below 2005 levels
2030 Emissions Goal (MT CO ₂ e)	203,983
2035 Target	49% below 2005 levels
2035 Emissions Goal (MT CO ₂ e)	173,386

Notes and Acronyms:

MT CO₂e = Metric tons of carbon dioxide equivalent

Per Capita Emission Targets

The 2017 Scoping Plan Update recommends local plan level GHG emissions reduction goals of no more than 6 MT CO₂e per capita by 2030 and no more than 2 MT CO₂e per capita by 2050. These goals consider all Statewide emission sources; however, some of the emission sources are not included in the City’s GHG inventories, such as industrial and aviation, and the City has no control over these emissions. By comparing the Statewide most recent year (2015) GHG inventory (ARB 2017) and the City’s 2013 inventory, it was determined that the City had control over 63 percent of Statewide GHG source types. Therefore, the state-aligned emissions goals were proportioned to 3.8 MT CO₂e per capita by 2030, and 1.27 MT CO₂e per capita by 2050. The 2020 and 2035 goals were interpolated from the 2030 and 2050 goals assuming same rate of reduction of the emission goals each year (TABLE 7).



TABLE 7 Per Capita GHG Reduction Targets for Community Emissions

	Community Target
2020 State Target (MT CO ₂ e/SP)	8.00
2020 Emissions Goal (MT CO ₂ e/SP)	5.06
2030 State Target (MT CO ₂ e/SP)	6.00
2030 Emissions Goal (MT CO ₂ e/SP)	3.8
2035 State Target (MT CO ₂ e/SP)	5.00
2035 Emissions Goal (MT CO ₂ e/SP)	3.16

Notes and Acronyms:

MT CO₂e = Metric tons of carbon dioxide equivalent

SP = service population (population + jobs)

As shown in FIGURE 9, FIGURE 10 and TABLE 8, in 2020 the City would meet the State Aligned efficiency GHG reduction targets under the ABAU scenario, but would need to reduce 63,130 MT CO₂e to meet the performance target. In 2030, under the ABAU scenario, the City would need to reduce 29,816 MT CO₂e to meet the State Aligned efficiency target, and would need to reduce 108,531 MT CO₂e to meet the performance target. In 2035, under the ABAU scenario, the City would need to reduce 70,471 MT CO₂e to meet the State Aligned efficiency target, and would need to reduce 163,157 MT CO₂e to meet the performance target.

TABLE 8 State-Aligned GHG Reduction Targets for Community Emissions

Sector	2005	2013	2020	2030	2035
BAU Emissions (MT CO ₂ e)	339,972	402,574	432,982	486,170	515,462
Adjusted BAU Mass Emissions (MT CO ₂ e)	339,972	402,574	352,106	339,514	336,543
Service Population (Population + Jobs)	70,152	71,663	76,437	81,499	84,200
Adjusted BAU Per Capita Emissions (MT CO ₂ e/SP)			4.61	4.17	4.00
State-Aligned Performance Target (% change from 2005)			-15%	-40%	-49%
State-Aligned Performance Target (MT CO ₂ e)			288,976	203,983	173,386
Reductions from Adjusted BAU needed to meet the Performance Target (MT CO ₂ e)			63,130	108,531	163,157
State-Aligned Efficiency Target (MT CO ₂ e/SP)			5.06	3.80	3.16
Reductions from Adjusted BAU needed to meet the Efficiency Target (MT CO ₂ e/SP)			Target Met	29,816	70,471

Notes and Acronyms:

MT CO₂e = Metric tons of carbon dioxide equivalent

SP = service population = population + jobs

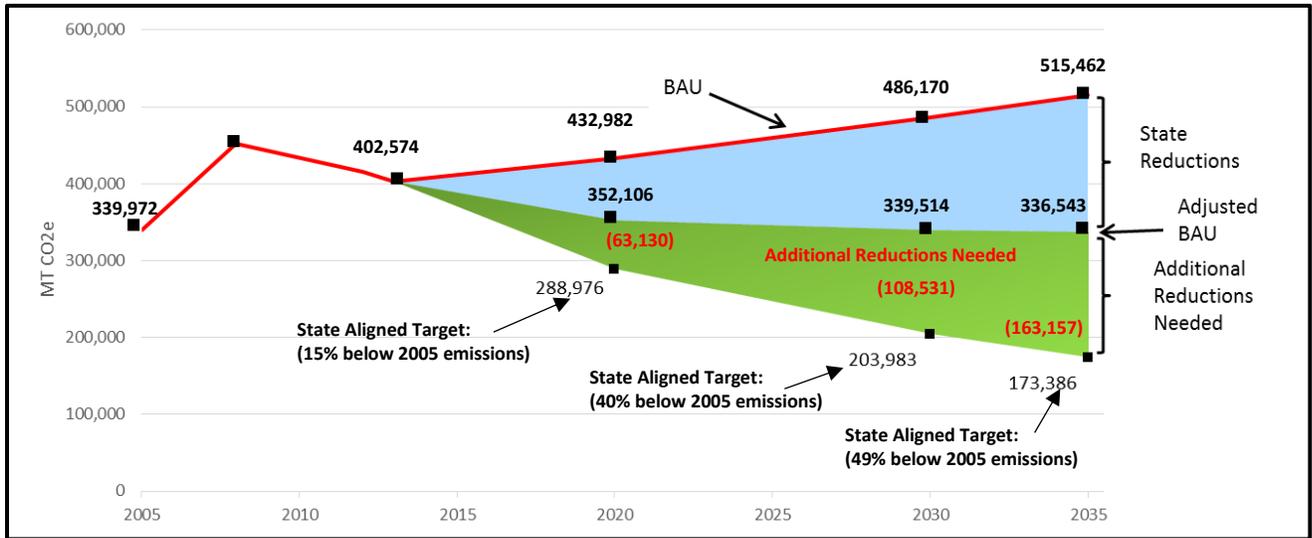


FIGURE 9 Community Emissions Inventories, Projections, and Performance Targets

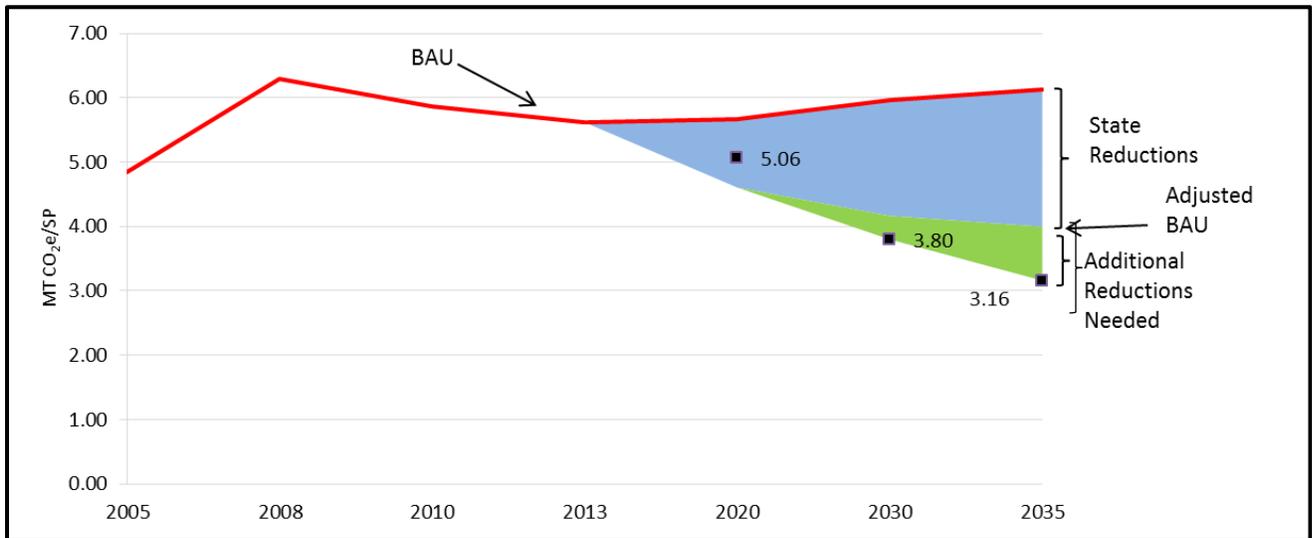


FIGURE 10 Community Emissions Inventories, Projections, and Efficiency Targets

Municipal Targets

To be aligned with the community goals, the City would need to reduce its emissions by 203 MT CO₂e from the 2020 Adjusted BAU forecast. The City will also need to implement measures to continue to achieve GHG reductions beyond 2020. By 2030, the City will need to reduce municipal operation emissions by 994 MT CO₂e from an Adjusted BAU forecast to meet a 40-percent reduction goal below 2005 levels. By 2035, the City will need to reduce municipal operation emissions by 836 MT CO₂e from an Adjusted BAU forecast to meet a 49-percent reduction goal below 2005 levels (TABLE 9 and FIGURE 11).



TABLE 9 State-Aligned GHG Reduction Targets for Municipal Emissions

Sector	2005	2013	2020	2030	2035
BAU Emissions (MT CO ₂ e)	1,657	1,909	1,948	2,003	2,031
Adjusted BAU Emissions (MT CO ₂ e)	1,657	1,909	1,611	1,657	1,681
State-Aligned Target (% change from 2005)			-15%	-40%	-49%
State-Aligned Target (% change from 2013)			-26%	-46%	-56%
State-Aligned Emissions Goal (MT CO ₂ e)			1,408	994	845
Reductions from Adjusted BAU needed to meet the Target (MT CO ₂ e)			203	663	836

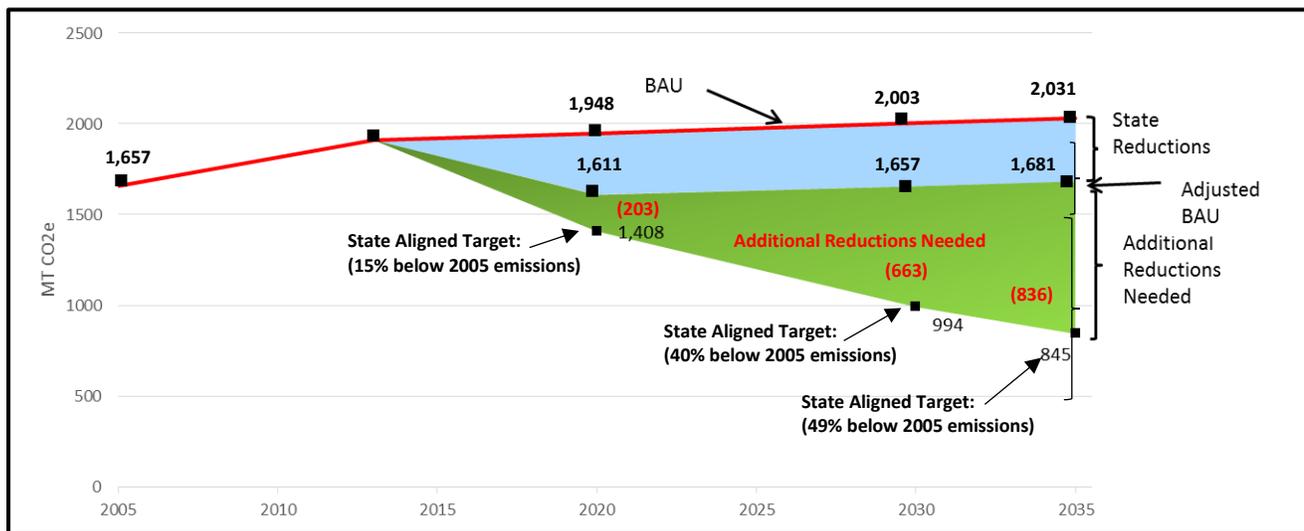


FIGURE 11 Municipal Emissions Inventories, Projections, and Targets



CHAPTER 3 GHG Reduction Measures

This chapter details how the City will meet its GHG reduction targets by using goals, measures, and actions at the community and municipal levels. The goal describes the overarching objective related to increasing energy efficiency or decreasing energy consumption, such as increasing energy efficiency in residential building units, as well as reducing VMT and solid waste generation. Within each goal, one or more measures are presented indicating the City’s commitment toward meeting the goal. Within each measure, one or more actions are presented that indicate the steps the City may take in achieving the measure. Each measure includes the GHG reduction potential in 2020 and 2035. Actions are designed to include the steps needed to implement the measure. Actions may be added or removed over time, depending on their relevancy, funding availability, and whether the actions are successful in supporting measures as they are monitored over time, but are considered essential to guiding staff in implementation. Actions include a performance indicator, implementation timeframe, department or agency responsible for implementation, and cost information, where applicable. In addition, this Plan will result in local benefits while reducing GHG emissions, called co-benefits. Co-benefits range from providing improved air quality and mobility to increased awareness about sustainability. Co-benefits are identified with each measure by an icon.



Local Co-Benefits					
	Increased energy efficiency/reduced demand		Water conservation		Improved public health
	Improved air quality		Increased renewable energy		Increased non-motorized transportation
	Sustainability education and awareness		Enhanced land use/ community design		Increased resiliency

EXISTING REGIONAL AND LOCAL GHG REDUCTION MEASURES

Existing regional and local GHG reductions include the San Diego Association of Governments (SANDAG) Sustainable Communities Strategy (SCS) found in the SANDAG Regional Transportation Plan and the City of Santee Mobility Element within the Santee General Plan. These documents qualitatively describe on-road transportation strategies that will reduce GHG emissions within the Santee community. However, SANDAG did not quantify GHG emission reductions within the City of Santee specific to the SCS. The City of Santee Mobility Element implements the SANDAG SCS within the City of Santee but did not quantify the reductions in GHG emissions. The following briefly summarizes the goals, objectives and policies within the City of Santee Mobility Element that implement the SANDAG SCS relate to GHG reductions.

Mobility Element Goal: A balanced, interconnected multimodal transportation network that allows for the efficient and safe movement of all people and goods, and that supports the current and future needs of Santee community members and travel generated by planned land uses. The following Mobility Element objectives and policies reduce GHG emissions.

Objective 1.0: Complete Streets.

Policy 1.1 The City shall provide integrated transportation and land use decisions that enhance smart growth development served by complete streets, which facilitate multimodal transportation opportunities.

Policy 1.2: The City should design streets in a manner that is sensitive to the local context and recognizes that needs vary between mixed use, urban, suburban, and rural settings.

Policy 1.3: The City shall ensure that the entire right-of-way is designed to accommodate appropriate modes of transportation.

Policy 1.4: The City should create a vibrant town center by developing a connected system of multi-modal corridors that encourage walking, biking, and riding transit. A mobility hub should be considered at the existing Santee Trolley Square providing features such as bike-share, bike parking, car-share, neighborhood electric vehicles, real time traveler information, demand-based shuttle



services, wayfinding signage, bicycle and pedestrian improvements, urban design enhancements, etc.

Objective 2.0 Multi-modal Transportation Network of local roads, collectors, arterials, freeways and transit services. This multi-modal transportation network will be developed in a manner that promotes the health and mobility of Santee residents and that meets future circulation needs, provides access to all sectors of the City, and supports established and planned land uses. The following policies reduce GHG emissions and will implement objective 2.0.

Policy 2.1: The City shall encourage an automobile Level of Service “D” on street segments and at intersections throughout the circulation network while also maintaining or improving the effectiveness of the non-automotive components of the circulation system (i.e. pedestrians, bicyclists, and public transit), especially in the Town Center area.

Policy 2.2: The City should ensure adequate accessibility for all modes to the northern undeveloped area of the City by designating a functional network of public streets for future dedication either prior to, or concurrent with anticipated need.

Policy 2.6: The City should encourage traffic circulation improvements such as, but not limited to, enhanced roadway markings, synchronized traffic signals, and Intelligent Transportation System (ITS) network management.

Policy 2.9: The City should work with the region to develop traffic and congestion management programs to improve commute times and improve air quality.

Objective 5.0: Allow parking reductions around transit and affordable housing.

Policy 5.1: The City should consider reducing parking requirements in the town center area and at transit stations as transit ridership increases over time due to increased development intensities and a broader mix of land uses.

Policy 5.2: The City should maximize shared parking opportunities for uses with varied peak parking periods.

Policy 5.3: The City should exercise flexibility in the application of parking standards to support transit-oriented development.

Objective 6.0: Increase the use of public transit systems.

Policy 6.1: The City should coordinate with SANDAG and MTS to maintain and enhance transit services in the City so that they are efficient, cost-effective, and responsive to growth and redevelopment.

Policy 6.2: The City should coordinate with SANDAG and MTS to improve bus stop and shelter facilities to increase the comfort of users.



Policy 6.3: The City should coordinate with SANDAG and MTS to provide multi-modal support facilities and adequate access near and to/from transit stops for bicyclists and pedestrians, including children and youth, seniors, and persons with disabilities.

Policy 6.4: The City should coordinate with SANDAG and MTS to post route maps and pick-up/drop-off times at each stop.

Policy 6.5: The City should coordinate with MTS to encourage establishing transit stops in areas of concentrated activity such as near senior housing projects, medical facilities, major employment centers, and mixed use areas.

Policy 6.6: The City should coordinate with MTS to accommodate transit centers and major stops with adequate bicycle and pedestrian access and secure bicycle storage where appropriate. Include facilities that are well designed, provide appropriate lighting and are safe, comfortable, and attractive.

Policy 6.7: The City should provide incentives for transit-oriented development, such as a parking reduction consistent with regional standards, for more intense development and higher density residential uses along major transportation corridors or in areas accessible to transit use.

Objective 7.0: Develop, maintain, and support a safe, comprehensive and integrated bikeway system that encourages bicycling, as documented in the City's Bicycle Master Plan (BMP).

Policy 7.1: The City shall continue to implement and maintain a comprehensive bicycle route system, and to designate appropriate bikeways through the regular update of the City's Bicycle Master Plan.

Policy 7.2: The City should strive to achieve objectives and policies identified in the Bicycle Master Plan including those related to bicycle safety awareness, bicycle promotion, maintenance and monitoring.

Policy 7.3: The City should promote the development of hiking and bicycle trails along the San Diego River in conjunction with the San Diego River Plan.

Policy 7.4: The City should require new development and redevelopment to provide connections to existing and proposed bicycle routes, where appropriate.

Policy 7.5: The City should keep abreast of bicycle facility innovations in other cities and regions, and seek to incorporate these into the bicycle network.

Objective 8.0: Develop and maintain an accessible, safe, complete and convenient pedestrian system that encourages walking.

Policy 8.1: The City should require the incorporation of pedestrian-friendly design concepts where feasible including separated sidewalks and bikeways, landscaped parkways, traffic calming measures, safe intersection designs and access to transit facilities and services into both public and private developments.



Policy 8.2: The City should provide for the connectivity of wide, well-lit sidewalks and environments with safety buffers between pedestrians and vehicular traffic, where feasible.

Policy 8.3: The City should pursue the elimination of physical barriers around public facilities and commercial centers to improve access and mobility of the elderly and disabled in a manner consistent with the Title 24 of the California Code of Regulations and the federal Americans with Disabilities Act (ADA).

Policy 8.4: The City shall require non-contiguous sidewalks on all streets with a residential collector classification or higher, as appropriate.

Policy 8.5: The City should identify and implement pedestrian improvements with special emphasis on providing safe access to schools, parks, community and recreation centers, and shopping districts.

Policy 8.6: The City should promote walking and improve the pedestrian experience by requiring pedestrian facilities along all classified streets designated on the Circulation Plan; by implementing streetscape improvements along pedestrian routes that incorporate such elements as shade trees, street furniture, and lighting; by orienting development toward the street; by employing traffic calming measures; and by enforcing vehicle speeds on both residential and arterial streets.

Policy 8.7: The City should promote walking as the primary travel mode for the school trip through implementing the citywide Safe Route to School Plan.

Policy 8.8: The City should improve pedestrian safety at intersections and mid-block crossings, where appropriate.

Policy 8.9: On all primary pedestrian corridors, the City shall ensure adequate green time, based on established standards, at all crosswalks that allow the elderly and disabled to cross City streets on a single green light.

Policy 8.10: The City should provide connected network of safe pedestrian crossings throughout the City.

Policy 8.11: The City should enhance pedestrian visibility by enforcing parking restrictions at intersection approaches, improving street lighting, and minimizing obstructions.

Objective 9.0: Increased use of alternative modes of travel to reduce peak hour vehicular trips, save energy, and improve air quality.

Policy 9.1: The City shall encourage and provide for Ride Sharing, Park 'n Ride, and other similar commuter programs that eliminate vehicles from freeways and arterials.

Policy 9.2: The City should encourage businesses to provide flexible work schedules for employees.

Policy 9.3: The City should encourage employers to offer shared commute programs and/or incentives for employees to use transit.



Policy 9.4: The City should encourage the use of alternative transportation modes, such as walking, cycling and public transit. The City should maintain and implement the policies and recommendations of the Bicycle Master Plan and Safe Routes to School Plan to improve safe bicycle and pedestrian access to major destinations.

Policy 9.5: The City should improve safety of walking and biking environment around schools to reduce school-related vehicle trips.

Objective 10.0: The City shall remain actively involved in regional issues.

Policy 10.1: The City should promote and support the continued expansion of the San Diego Trolley system which benefits residents of Santee, especially in higher density areas.

The community measures related to on-road transportation implement these Mobility Element Policies.

COMMUNITY MEASURES

This section summarizes the proposed reduction measures to be implemented by the City to reduce its community GHG emissions. The reduction measures are organized by source category (electricity, natural gas, water, transportation, solid waste, and new developments).

Energy Efficiency

Residential Land Uses

Residential Energy includes electricity and natural gas consumption within households in the City. There are many opportunities to save energy from existing and future development, described in the goals and measures below.

Goal 1: Increase Energy Efficiency in Existing Residential Units

MEASURE 1.1: ENERGY EFFICIENCY EDUCATION AND BEST PRACTICES

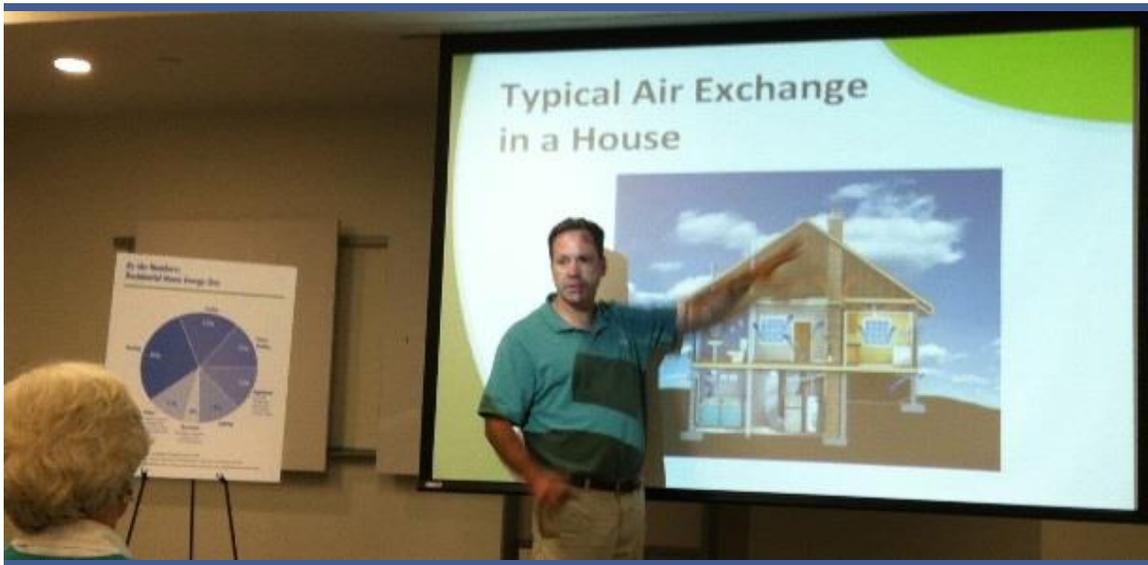
Opportunities for residents to improve energy efficiency in their homes range from changes to behavior that they can start today to physical modifications or improvements they can make to their homes. Education of both the public and municipal employees is at the core of attaining energy efficiency goals. While most of the other measures include an outreach component, creating a specific education measure will emphasize the critical role of education in achieving energy efficiency. An education measure will also provide City staff with a framework to educate community members about behavioral and technological changes that can increase energy efficiency.

ACTIONS

- Post links on website/social media and provide materials at public events
- Email list for email blasts of new information or trainings



- Support SDG&E energy efficiency programs within Santee
- Support the use of the SDG&E energy efficiency resource center
- Designate an Energy Advocate to promote and manage energy efficiency programs
- Fund EsGil Corporation building inspector to hold a 1-hour training, semi-annually, on energy efficiency and Title 24 requirements



1.1: Energy Efficiency Training, Education, and Recognition

GHG Reduction Potential

Supporting Measure

Co-Benefits



MEASURE 1.2: INCREASE COMMUNITY PARTICIPATION IN EXISTING ENERGY EFFICIENCY OPPORTUNITIES

There are many energy efficiency opportunities that are low-cost for residents to initiate and result in cost savings over time. These opportunities are generally from existing programs, and SDG&E offers many rebates and other incentives to purchase energy efficient appliances, lighting and other low cost investments that facilitate energy efficiency. Through this measure, the City will work to increase residents’ participation in existing energy efficiency programs such as Energy Savings Assistance Program that are low-cost or even provide a financial benefit to the resident. As programs change over time, continued and up-to-date outreach is necessary. The action below would provide a variety of channels for ongoing communication to the City’s residents.



ACTION

- Partner with SDG&E for outreach events including SDG&E energy efficiency program events. If requested, SDG&E will also provide a booth at local events within Santee to educate residents and businesses on the various energy efficiency programs and incentives.



1.2: Increase Existing Energy Efficiency Program Participation

GHG Reduction Potential (2020)	45 MT CO ₂ e ⁶
GHG Reduction Potential (2035)	45 MT CO ₂ e
kWh Savings (2020)	66,890 kWh ⁷
Therms Savings (2020)	3,943 therms ⁸
Co-Benefits	

⁶ GHG emissions reductions based upon kWh and Therm savings and calculated using the California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas (GHG) Mitigation Measures (CAPCOA 2010), Section 2.1, Building Energy Use.

⁷ kWh savings based on historical participation rates in the SDG&E energy efficiency incentives programs.

⁸ Therms savings based on historical participation rates in the SDG&E energy efficiency incentives programs.



MEASURE 1.3: HOME ENERGY EVALUATIONS

Home energy evaluations are necessary to identify cost-effective opportunities for energy saving and for residents to take practical actions to achieve energy efficiency. Home energy evaluations can be established or promoted by a variety of existing programs. An Energy Conservation and Disclosure Ordinance is also a mechanism to disclose building energy performance and facilitate energy improvements in existing homes. If an Energy Conservation and Disclosure Ordinance is adopted, it would require properties to undergo energy audits before the sale of the property.

ACTIONS

- Promote or provide energy audits such as through Energy Upgrade California.
- Present a residential Energy Conservation and Disclosure Ordinance to the City Council for consideration.
- Present an ordinance requiring point of sale energy rating to City Council for consideration.



1.3: Promote Home Energy Evaluations	
GHG Reduction Potential	Supporting Measure
Co-Benefits	



MEASURE 1.4: RESIDENTIAL HOME ENERGY RENOVATIONS

Approximately 56 percent of residential buildings in the City were built before the adoption of Title 24. Buildings built before adoption of Title 24 are not energy efficient, and renovations would achieve higher energy efficiency. Many programs and incentives across the state or country help promote home energy renovations, including city-supervised funding, permit process improvements and city ordinances.

ACTIONS

- Promote existing incentivized programs.
- Promote participation in Green Building Program.
- Establish or promote financing programs for home upgrades such as HERO.
- Establish online permitting to facilitate upgrades.



1.4: Promote Residential Home Energy Renovations

GHG Reduction Potential (2020)	7,811 MT CO ₂ e ⁹
GHG Reduction Potential (2035)	7,811 MT CO ₂ e
kWh Savings (2020)	15,065,193 kWh ¹⁰
Therms Savings (2020)	468,554 therms ¹¹
Co-Benefits	

⁹ GHG Reductions based upon kWh and Therm savings and calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.1, Building Energy Use.

¹⁰ kWh savings based upon historical participation rates in the HERO energy efficiency financing program.

¹¹ Therms savings based upon historical participation rates in the HERO energy efficiency financing program.



Goal 2: Energy Efficiency in New Residential Units

MEASURE 2.1: ENERGY EFFICIENT HOMES

City planners have a unique opportunity to encourage/inform developers of new energy efficiency opportunities in new development. This policy will develop City staff to become resources in encouraging and implementing energy efficiency building measures beyond those required in current Title 24 standards. This policy will also ensure that as Title 24 standards are updated, City staff are well informed and can implement updates quickly and effectively.

ACTIONS

- Educate City staff, developers, etc., on future Title 24 updates and additional energy efficiency opportunities for new residential development.
- Promote Tier 1 / 2 Green Building Ratings such as Leadership in Energy and Environmental Design (LEED), Build It Green/Green Point Rating System, or Energy Star® certified buildings.
- Establish online permitting to facilitate upgrades.
- Within one year of plan adoption, create an energy award program for net-zero energy homes.



2.1: Energy Efficient Homes	
GHG Reduction Potential (2020)	5,102 MT CO ₂ e ¹²
GHG Reduction Potential (2035)	17,750 MT CO ₂ e
Co-Benefits	  

¹² GHG reductions based upon new residential developments being built as zero net energy homes and calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.1, Building Energy Use.



Commercial Land Uses

Commercial Energy includes electricity and natural gas consumption for businesses in the City. Opportunities to save energy from existing and future development are described in the goals and measures below.

Goal 3: Increase Energy Efficiency in Existing Commercial Units

MEASURE 3.1: ENERGY EFFICIENCY TRAINING, EDUCATION, AND RECOGNITION IN COMMERCIAL SECTOR

Education is at the core of attaining energy efficiency goals. Creating a specific education measure would emphasize the critical role of education in achieving energy efficiency. An education measure would also provide City staff with a framework to interact with and educate community members about behavioral and technological changes that can increase energy efficiency.

ACTIONS

- Post links on website/social media and provide materials at public events.
- Email list for email blasts of new information or trainings.
- Promote SDG&E energy efficiency events fair.
- Promote the SDG&E energy efficiency resource center.
- Designate an Energy Advocate to promote and manage energy efficiency programs.
- Fund EsGil Corporation building inspector to hold a one-hour training session, semi-annually on energy efficiency and Title 24 requirements.



3.1: EE Training, Education, and Recognition

GHG Reduction Potential

Supporting Measure

Co-Benefits





MEASURE 3.2: INCREASE BUSINESS PARTICIPATION IN EXISTING ENERGY EFFICIENCY PROGRAMS

There are many energy efficiency opportunities that are low-cost for businesses to initiate and result in cost-savings over time. SDG&E offers many rebates and other incentives to purchase energy efficient appliances, lighting and other low cost investments that facilitate energy efficiency. Through Measure 3.2, the City will work to increase businesses’ participation in existing energy efficiency programs that are low-cost or even provide a financial benefit to the business. Many businesses owners may be unaware that the opportunities exist.

ACTION

- ☐ Partner with SDG&E for outreach events including SDG&E energy efficiency program events. If requested, SDG&E will also provide a booth at local events within Santee to educate residents and businesses on the various energy efficiency programs and incentives.



3.2: Increase Business Participation in Existing Energy Efficiency Opportunities	
GHG Reduction Potential (2020)	660 MT CO ₂ e ¹³
GHG Reduction Potential (2035)	660 MT CO ₂ e
kWh Savings (2020)	1,651,021 kWh ¹⁴
Therms Savings (2020)	14,551 therms ¹⁵
Co-Benefits	

¹³ GHG emissions reductions based upon kWh and Therm savings calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.1, Building Energy Use.

¹⁴ kWh savings based upon historical participation rates in SDG&E energy efficiency incentives programs.

¹⁵ Therm savings based upon historical participation rates in SDG&E energy efficiency incentives program.



MEASURE 3.3: NON-RESIDENTIAL ENERGY AUDITS

Commercial energy audits are necessary to identify cost-effective opportunities for energy savings and for business owners to take practical actions to achieve energy efficiency. The audits can be established or promoted by various existing programs.

ACTION

- Promote energy audits such as through Energy Upgrade California.



3.3: Incentivize or Require Nonresidential Energy Audits

GHG Reduction Potential	Supporting Measure
Co-Benefits	



MEASURE 3.4: NON-RESIDENTIAL RETROFITS

As most commercial buildings in the City were built before the adoption of Title 24, most commercial facilities and equipment are not energy efficient. Therefore, retrofits are necessary to achieve higher energy efficiency. Many programs and incentives across the state or country help promote nonresidential energy retrofits, including City-supervised funding, permit process improvements and City ordinances.

ACTIONS

- Promote existing incentivized programs such as Energy Upgrade California.
- Establish or promote participation in California Solar Initiative.
- Establish or promote financing programs such as Property-Assessed Clean Energy (PACE).



3.4: Promote Commercial Energy Retrofits	
GHG Reduction Potential (2020)	8,010 MT CO ₂ e ¹⁶
GHG Reduction Potential (2035)	8,010 MT CO ₂ e
kWh Savings (2020)	20,148,154 kWh ¹⁷
Therms Savings (2020)	168,436 therms ¹⁸
Co-Benefits	

¹⁶ GHG reductions based upon kWh and Therms savings calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.1, Building Energy Use.

¹⁷ Kwh savings based on historical participation rates in PACE energy efficiency financing programs.

¹⁸ Therm savings based on historical participation rates in PACE energy efficiency financing programs.



Goal 4: Increase Energy Efficiency in New Commercial Units

Measure 4.1: ENERGY EFFICIENT BUSINESSES

City planners have a unique opportunity to inform developers of new energy efficiency opportunities and encourage them to adopt these technologies in new development. This policy will develop City staff to be resources in encouraging and implementing energy efficiency beyond that required by current Title 24 standards. This will also ensure that as Title 24 standards are updated, City staff are well informed and can implement updates quickly and effectively.

ACTIONS

- Educate City staff, developers, etc., on future Title 24 updates and the additional energy efficiency opportunities for new residential development.
- Promote Tier 1 and Tier 2 Green Building Ratings such as LEED, Build It Green/Green Point Rating System, or Energy Star® certified buildings.
- Within three years of plan adoption, provide for City Council consideration a plan to waive or reduce permit fees for zero energy businesses.
- Establish online permitting to facilitate upgrades.
- Create an energy award program for net-zero energy businesses.



4.1: Energy Efficient Businesses

GHG Reduction Potential (2020)	1,442 MT CO ₂ e ¹⁹
GHG Reduction Potential (2035)	12,337 MT CO ₂ e ²⁰
Co-Benefits	  

¹⁹ 2020 GHG reductions based upon new commercial development applications in 2019 providing energy efficiency at the 2020 Title 24 standard of efficiency.

²⁰ 2035 GHG reductions based upon new commercial development providing zero net energy buildings.



Water Efficiency

Goal 5: Increase Energy Efficiency through Water Efficiency

MEASURE 5.1: WATER EFFICIENCY THROUGH ENHANCED IMPLEMENTATION OF SB X7-7

SB X7-7, or The Water Conservation Act of 2009, requires all water suppliers to increase water use efficiency. The legislation set an overall goal of reducing per capita urban water consumption by 20 percent from a baseline level by 2020. This goal can be met by taking a variety of actions, including targeted public outreach and promoting water efficiency measures such as low-irrigation landscaping.

ACTIONS

- Post links on website/social media and provide materials at public events.
- Email list for email blasts of new information or trainings.
- Develop an Urban Forest Management Plan within two years of plan adoption.
- Within one year of plan adoption, update the City's official street tree list to include more water-efficient varieties.
- Within one year of plan adoption, provide an update to the Zoning Ordinance to add clarity on desired recreational amenities in multifamily complexes to replace the previously desired pool and water features.



5.1: Support Enhanced Implementation of SB X7-7	
GHG Reduction Potential (2020)	1,279 MT CO ₂ e ²¹
GHG Reduction Potential (2035)	1,409 MT CO ₂ e
kWh Savings (2020)	3,622,962 kWh ²²
Co-Benefits	

²¹ GHG reductions based upon estimated kWh savings resulting from compliance with SB X7-7 calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 4.2, Water Use.

²² kWh savings based upon compliance with SB X7-7



MEASURE 5.2: EXCEED WATER EFFICIENCY STANDARDS

In addition to SB X7-7, more actions are being studied or have been taken to exceed water efficiency standards. These efforts include education and outreach practices that could be combined with residential and commercial actions that emphasize the reuse of recycled/grey water and promote harvesting rainwater.

ACTIONS

- Staff time dedicated to work with Homeowner Associations (HOAs), businesses, and other groups for outreach.
- Promote recycled or grey water uses for non-municipal uses.
- Promote rainwater harvesting rebates and demonstrations.
- Promote and facilitate Padre Dam MWD’s Advanced Water Purification (AWP) project.



5.2: Exceed SB X7-7	
GHG Reduction Potential (2020)	22 MT CO ₂ e ²³
GHG Reduction Potential (2035)	25 MT CO ₂ e
kWh Savings (2020)	63,340 kWh ²⁴
Co-Benefits	

²³ GHG reductions based upon estimated kWh savings calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 4.1, Water Supply.

²⁴ kWh savings based upon ten percent of non-municipal new development including gray water systems and connecting to recycled water systems.



Advanced Goals and Measures

Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect

MEASURE 6.1: TREE PLANTING FOR SHADING AND ENERGY EFFICIENCY

Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration, making vegetation a simple and effective way to reduce urban heat islands. Shaded surfaces may be 20–45 degrees Fahrenheit ([°F] 11–25 degrees Celsius [°C]) cooler than the peak temperatures of un-shaded materials. In addition, evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2–9 °F (1–5 °C). Trees and vegetation that directly shade buildings can reduce energy use by decreasing demand for air conditioning.

ACTIONS

- Within one year of plan adoption, propose a change to landscaping ordinance to require more trees on site during project review and plan check.
- Work with community to develop a tree-planting group.
- Develop a City tree-planting program consistent with the urban forestry management plan (Measure 5.1).



6.1: Tree Planting for Shading and Energy Efficiency	
GHG Reduction Potential (2020)	330 MT CO ₂ e ²⁵
GHG Reduction Potential (2035)	363 MT CO ₂ e
kWh Savings (2020)	934,322 kWh ²⁶
Co-Benefits	

²⁵ GHG reductions based upon kWh savings calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 7.1, Vegetation.

²⁶ kWh savings based upon an assumed 2.5 percent reduction in cooling load for buildings resulting from reduced urban heat island effect. United States Environmental Protection Agency (EPA) Using Trees and Vegetation to Reduce Heat Islands. <https://www.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands>. Accessed August 2018.



MEASURE 6.2: LIGHT-REFLECTING SURFACES FOR ENERGY EFFICIENCY

Replacing surface areas with light-reflecting materials can decrease heat absorption and lower outside air temperature. Both roofs and pavements are ideal surfaces for taking advantage of this advanced technology.

Cool roof is built from materials with high thermal emittance and high solar reflectance—or albedo—to help reflect sunlight (and the associated energy) away from a building. These properties help roofs to absorb less heat and stay up to 50–60 °F (28–33 °C) cooler than conventional materials during peak summer weather. Cool roofs may be installed on low-slope roofs (such as the flat or gently sloping roofs typically found on commercial, industrial, and office buildings) or the steep-sloped roofs used in many residences and retail buildings.

Cool pavement is built from materials that reflect more solar energy, enhance water evaporation, or have been otherwise modified to remain cooler than conventional pavements. This pavement can be created with existing paving technologies as well as newer approaches such as the use of coatings, permeable paving, or grass paving. Cool pavements save energy by lowering the outside air temperature, allowing air conditioners to cool buildings with less energy, and reducing the need for electric street lighting at night.

ACTIONS

- Present to City Council for consideration an ordinance requiring or incentivizing enhanced cool roofs on commercial, residential, and municipal buildings.
- Present to City Council for consideration an ordinance requiring or incentivizing cool pavements for commercial, residential, and municipal uses.



6.2: Promote, Incentivize, or Require Light-Reflecting Surfaces	
GHG Reduction Potential (2020)	4 MT CO ₂ e ²⁷
GHG Reduction Potential (2035)	4 MT CO ₂ e
kWh Savings (2020)	11,343 kWh
Co-Benefits	  

²⁷ GHG reductions and kWh savings calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 10.1, General Plans.



MEASURE 6.3: CARBON SEQUESTRATION THROUGH PRESERVATION OF NATURAL LANDS

The 2017 Scoping Plan Update provides that keeping natural and working lands intact and at high levels of ecological function (including resilient carbon sequestration) is necessary for the well-being and security of Californians in 2030 and beyond. Natural and working lands are identified as a key sector in the State’s climate change strategy. Storing carbon in trees, other vegetation, soils, and aquatic sediment is an effective way to remove carbon dioxide from the atmosphere. The City recognizes that preserving natural lands and enhancing natural habits can help to minimize the net GHG emissions. Through Measure 6.3, the City will work to preserve and enhance existing natural and working lands within the City that already contribute to carbon sequestration.

ACTIONS

- Adopt policies that encourage management practices known to enhance carbon sequestration on Natural and Working Lands.
- Adopt plans to conserve lands, water, and other natural features and resources for habitat function, watershed protection, air and water quality protection, and other ecosystem services.



6.3: Carbon Sequestration through Preservation of Natural Lands	
GHG Reduction Potential (2020)	Supporting Measure
Co-Benefits	



Transportation

Goal 7: Decrease GHG Emissions through Reducing Vehicle Miles Traveled

MEASURE 7.1: NON-MOTORIZED TRANSPORTATION OPTIONS

Non-motorized transportation includes walking and bicycling, and variants such as small-wheeled transport such as skates, skateboards, push scooters and hand carts, and wheelchair travel. These modes provide both recreation and transportation, and can help reduce vehicle miles traveled (VMT) by changing people’s everyday transportation habits.

The City of Santee Mobility Element was updated in October 2017, and includes a goal of “a balanced, interconnected multimodal transportation network that allows for the efficient and safe movement of all people and goods, and that supports the current and future needs of Santee community members and travel generated by planned land uses.” The objectives included in the updated element will support the Sustainable Santee Plan’s measure of encouraging mode shift in the City. Such objectives include implementation of AB 1358, the Complete Streets Act, which supports a balanced, multimodal transportation network. Additionally, the element includes objectives to increase the use of public transit, to develop and maintain accessible and safe pedestrian systems that encourage walking, and to remain active in regional transportation coordination, such as the expansion of the San Diego Trolley system.

ACTIONS

- Work with SANDAG and community to remove barriers to alternative transportation.
- Create a “Bike to work day” or “car free zone day” and other sponsored events to promote biking and other non-motorized transportation.
- Create additional active transportation routes from Santee Light Rail Transit station to surrounding residential areas as identified in Mobility Policies 1.1 through 10.1.
- Change Zoning Ordinances to re-evaluate parking requirement in areas served by transit which will implement Mobility Policy 5.3.



7.1: Non-Motorized Transportation Options

GHG Reduction Potential (2020)	438 MT CO ₂ e ²⁸
GHG Reduction Potential (2035)	373 MT CO ₂ e
VMT reduction (2020)	1,052,531 miles
Co-Benefits	

²⁸ GHG and VMT reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.3, Parking Policy/Pricing and Section 3.5 Transit System Improvements.



MEASURE 7.2: IMPLEMENT BICYCLE MASTER PLAN TO EXPAND BIKE ROUTES AROUND THE CITY

Bicycle-friendly roads are crucial to promote bicycle use as a transportation method. People tend to choose to bicycle if bike routes are available to separate them from motor vehicles and their safety can be ensured. Thus, implementing the existing City of Santee Bicycle Master Plan (2009) and constructing more bike routes would encourage more bicycle rides and help to reduce VMT. The updated City Mobility Element also includes an objective to develop, maintain, and support a safe, comprehensive and integrated bikeway system that encourages bicycling, as documented in the City’s Bicycle Master Plan.

ACTION

- Expand bike routes to improve bike transit by increasing Class 1 Bike Paths from 2.0 miles to 15.5 miles; Class 2 Bike Lanes from 14.5 miles to 34.3 miles; and Class 3 Bike Routes from 9.3 miles to 21.7 miles, which would implement the City of Santee Bicycle Master Plan.



7.2: Implement Bicycle Master Plan to Expand Bike Routes around City

GHG Reduction Potential (2020)	14,788 MT CO ₂ e ²⁹
GHG Reduction Potential (2035)	12,600 MT CO ₂ e
VMT reduction (2020)	35,522,934 miles
Co-Benefits	

²⁹ GHG and VMT reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.2, Neighborhood / Site Enhancements.

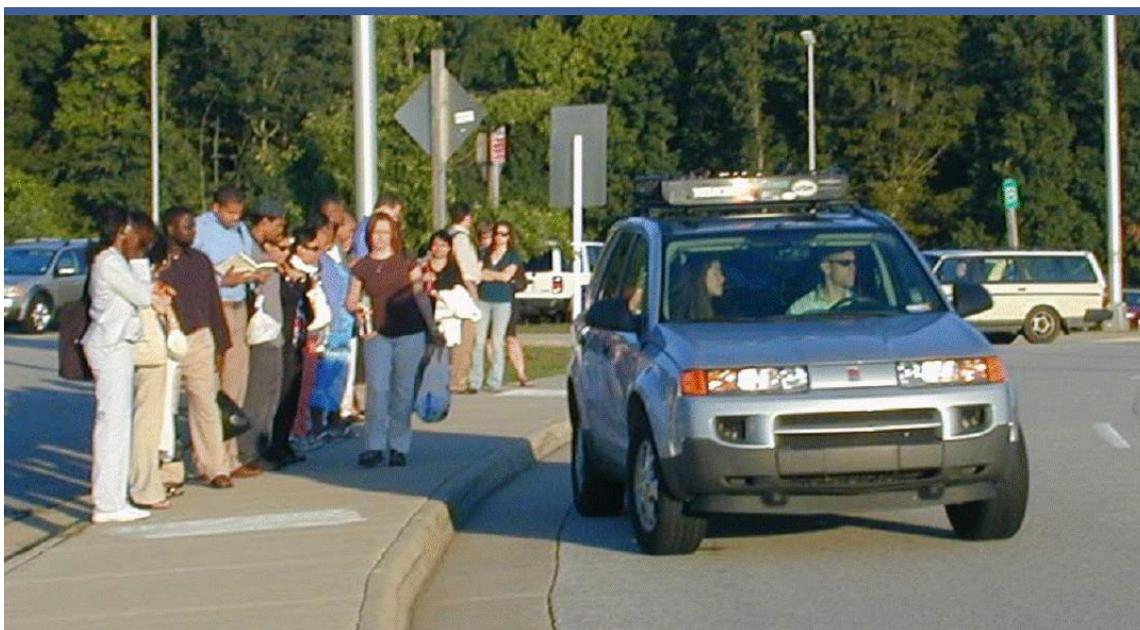


MEASURE 7.3: RIDE SHARING PROGRAMS WITHIN BUSINESSES

The local carpooling rate is as low as 3 percent for the City, and most people drive alone for work every day. A higher ridesharing rate means fewer VMT and GHG emissions, so encouraging carpool by providing incentive programs and necessary facilities can be helpful. The updated Mobility Element Objective 9.0, Transportation Demand Management aims to increase the use of alternative modes of travel to reduce peak-hour vehicular trips, to save energy, and to improve air quality. The policies include providing and encouraging Ride Sharing, Park ‘n Ride, and other commuter programs.

ACTIONS

- Promote ridesharing and facilitate air district incentives for ride sharing through Mobility Element Objective 9.0.
- Require existing and new businesses of a certain size to provide facilities (e.g., bike racks near building entrance, showers in offices).



7.3: Ride Sharing Programs within Businesses	
GHG Reduction Potential (2020)	19,761 MT CO ₂ e ³⁰
GHG Reduction Potential (2035)	16,838 MT CO ₂ e
VMT reduction (2020)	47,469,165 miles
Co-Benefits	

³⁰ GHG and VMT reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.3, Commute Trip Reduction Programs.



MEASURE 7.4: ELECTRIFY THE FLEET

Hybrid electric vehicles, plug-in hybrid electric vehicles, and all-electric vehicles (EVs) typically produce lower emissions than conventional vehicles. Any type of electrified vehicle emits less GHG than conventional vehicles by least nearly 40 percent. However, more than 95 percent of people still drive conventional gasoline or diesel vehicles, so programs to encourage use of alternative fuel vehicles are highly needed. With the Statewide EV ownership goal and the implementation of this measure, it was calculated that EV ownership would reach 13 percent by 2035.

ACTIONS

- Promote incentive programs at outreach meetings.
- Promote neighborhood electric vehicles.
- Apply for grants to install e-chargers at public facilities.
- Work with community groups and business to install e-chargers.
- Require or incentive new residential and commercial development to install e-chargers.



7.4: Electrify the Fleet	
GHG Reduction Potential (2020)	3,341 MT CO ₂ e ³¹
GHG Reduction Potential (2035)	47,414 MT CO ₂ e
VMT reduction (2020)	8,025,552 miles
Co-Benefits	

³¹ GHG and VMT reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.7 Vehicles, based upon historical trends of electric vehicle (EV) ownership (2010-2017) for 2020 EV ownership and California Air Resources Board (ARB) 2018 Zero Emissions Vehicle Action Plan Priorities Update to calculate 2035 electric vehicle ownership. Website: <http://business.ca.gov/Portals/0/ZEV/2018-ZEV-Action-Plan-Priorities-Update.pdf>. Accessed January 7, 2019.



MEASURE 7.5: COMPLETE STREETS AND SAFE ROUTES TO SCHOOLS PROGRAMS

Complete streets provide sidewalks and bicycle lanes on both sides of the street, and the roadway design at intersections and crossings ensures safety for people walking and bicycling. Safe routes to schools incentivize more children to walk or bike to school, instead of families driving private vehicles to take their children to school. Both programs would enhance walkability in the City and make the City more bicycle-friendly. By encouraging more people to walk and bike rather than drive, these programs could help reduce VMT.

ACTIONS

- Implement the complete streets program through Mobility Element Objective 1.0, Complete Streets.
- Establish a safe routes to schools program.
- Create a vibrant town center by developing a connected system of multi-modal corridors that encourage people to drive less and walk and bicycle more through Mobility Element Policy 1.4.



7.5: Complete Streets and Safe Routes to Schools Programs

GHG Reduction Potential (2020)	5,477 MT CO ₂ e ³²
GHG Reduction Potential (2035)	4,677 MT CO ₂ e
VMT reduction (2020)	13,156,642 miles
Co-Benefits	

³² GHG and VMT reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.2 Neighborhood / Site Enhancements.



MEASURE 7.6: REDUCE VEHICLE TRIPS TO/FROM SCHOOL

School-based VMT comprises approximately 20 percent of the City’s total VMT. The Santee School District offers school bus services free of charge. This effort could greatly reduce school-based trips using private vehicles. By expanding the school bus program and encouraging more families to use the services, the school bus program could not only contribute to VMT reduction, but also provide safe and convenient services to families with children.

ACTION

- Expand the school bus program and encourage more families to use school bus services.
- Promote the use of electronic applications to foster carpooling (supporting action)³³



7.6: Reduce Vehicle Trips to School

GHG Reduction Potential (2020)	16,431 MT CO ₂ e ³⁴
GHG Reduction Potential (2035)	14,000 MT CO ₂ e
VMT reduction (2020)	39,469,927 miles
Co-Benefits	 

³³ <https://www.carpooltoschool.com> or similar applications. This is a supporting action and no GHG or VMT reductions are taken as part of this plan.

³⁴ GHG and VMT reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.4, Commute Trip Reduction Programs.



Solid Waste

Goal 8: Decrease GHG Emissions through Reducing Solid Waste Generation

MEASURE 8.1: REDUCE WASTE TO LANDFILLS

According to 2008 Statewide Waste Characterization data, the commercial sector generates nearly 75 percent of the solid waste in California. Furthermore, much of the commercial sector waste disposed in landfills is readily recyclable. Increasing the recovery of recyclable materials will directly reduce GHG emissions. In particular, recycled materials can reduce the GHG emissions from multiple phases of product production, including extraction of raw materials, preprocessing, and manufacturing. As described under the Regulatory Setting in Chapter 1, the Mandatory Commercial Recycling Measure was adopted in 2012 and is designed to achieve a reduction in GHG emissions of 5 million MT CO₂e. To achieve the measure’s objective, an additional 11 percent of solid waste will need to be recycled from the commercial sector by 2020 and beyond. The City has also created a 90-percent diversion goal by 2035. The actions below are necessary to help the City achieve both its 2020 and 2035 goals. These goals will continue to progress the City towards zero waste. CalRecycle defines zero waste as “a process and a philosophy that involves a redesign of products and consumption, so that all material goods can be reused or recycled—or not needed at all.”³⁵

ACTIONS

- Outreach to community to promote waste recycling and diversion.
- Add additional recycling containers in public places.
- Increase Construction and Demolition Debris Reduction Requirement by 10 percentage points over the current State requirement up to a maximum of 100%.
Note: Current State requirement is 65%. We would initially increase this to 75%.
- Encourage joint projects between the solid waste collector and Padre Dam Municipal Water District designed to reduce the stream of solid waste going to the landfill.

³⁵ CalRecycle. 2017. “Zero Waste.” December 11, 2017. Website: <http://www.calrecycle.ca.gov/ZeroWaste/> (accessed December 18, 2017).



8.1: Reduce Waste to Landfills	
GHG Reduction Potential (2020)	7,233 MT CO ₂ e ³⁶
GHG Reduction Potential (2035)	8,238 MT CO ₂ e
Co-Benefits	

³⁶ GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 6.1, Solid Waste and City of San Diego Environmental Services Recycling Programs. Website: <https://www.sandiego.gov/environmental-services/recycling/residential/consumer>. Accessed January 14, 2019.



Clean Energy

Goal 9: Decrease GHG Emissions through Increasing Clean Energy Use

MEASURE 9.1: CLEAN ENERGY

Clean energy includes energy efficiency and clean energy supply options such as highly efficient combined heat and power as well as renewable energy sources. By identifying, designing, and implementing clean energy measures and technology solutions, the City is delivering important environmental and economic benefits, including a reduction in GHG emissions.

ACTION

- Outreach to the community to promote incentives such as the California Solar Initiative.



9.1: Promote Clean Energy	
GHG Reduction Potential (2020)	Supporting Measure
Co-Benefits	   



MEASURE 9.2: COMMUNITY CHOICE AGGREGATION PROGRAM

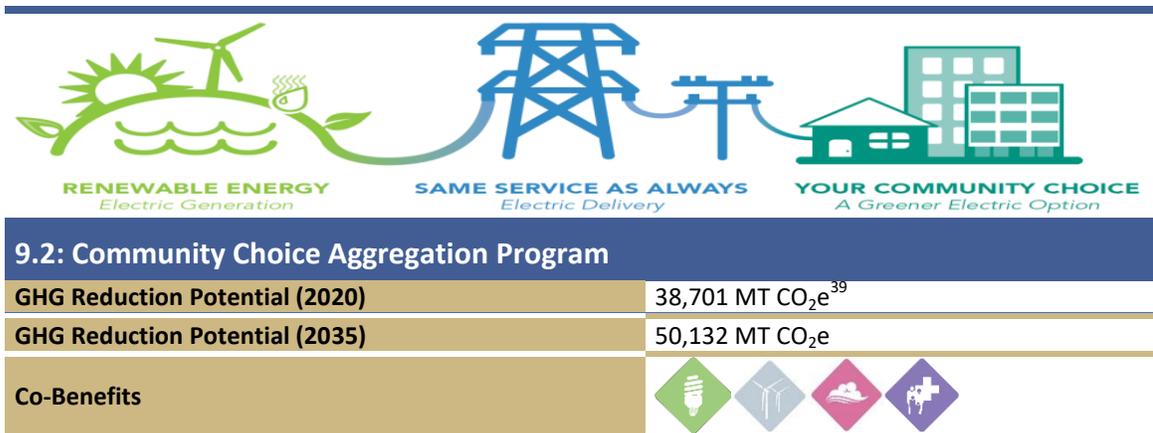
Besides outreach, the City is also actively seeking opportunities to join the regional Community Choice Aggregation (CCA) program, which would allow the City’s energy users to choose an alternative option to SDG&E and use more renewable energy. The ongoing CCA programs have renewable energy percentages between 20 and 100, and the national opt-out rates for the program range from 3 percent to 5 percent. Because electricity accounts for 54 percent of the City’s baseline emission inventory, participation in a regional CCA district could provide a significant source of future emission reductions.

Assembly Bill 117 (2002) allows California cities and counties to either individually or collectively supply electricity to customers within their borders through the establishment of a CCA. The advantages of regional CCAs that include participation from multiple local jurisdictions would be the creation of efficiencies. The City will seek opportunities for collaboration with other local jurisdictions to develop and implement a CCA that would produce mutually beneficial results. Developing a CCA would require a detailed analysis of energy demand, efficiency opportunities, and available clean electricity sources for purchase.

If the City implements a CCA program, there would be an additional 38,701 MT CO₂e reduced by 2020, 46,322 MT CO₂e reduced by 2030, and 50,132 MT CO₂e reduced by 2035. However, due to the fact that implementation of a CCA program would require preparation time for carrying out studies, forming governing bodies, and carrying out other administrative tasks, to provide a conservative estimate, energy savings and GHG reductions from CCA are listed separately from the total quantification of other local reduction measures.

ACTION

Present to City Council for consideration a Community Choice Aggregation program that aims to provide 100 percent renewable energy by 2035.^{37 38}



³⁷ Rather than assuming attainment of 100% clean energy, the City used the historical average of 70% clean energy for CCAs with similar goals. The actual percentage for the reduction measure could vary and may exceed this conservative assumption.

³⁸ The City used a conservative “opt out” rate of 5% which is at the upper range discussed above.

³⁹ GHG reductions calculated using historical data on CCAs in California accessed at LeanEnergy.org. Website: <http://leanenergyus.org/cca-by-state/california/>. Accessed on January 14, 2019.



CEQA Screening Tables

Goal 10: Decrease GHG Emissions from New Development through Performance Standards

MEASURE 10.1: SCREENING TABLES

City planners have a unique opportunity to provide developers a flexible way of demonstrating GHG reductions within new development by providing screening tables for developers to fill out during applications of new development projects. Screening tables are a menu of options of energy efficiency improvements, renewable energy options, water conservation measures, and other options that provide predictable GHG reductions. Each option within the Screening tables includes point values based upon the GHG reduction that option would provide to a development project. Developers that choose options from the screening tables totaling 100 points or more will be determined to have provided a fair-share contribution of GHG reductions, and therefore, are considered consistent with the Sustainable Santee Action Plan. This determination of consistency can be used in a CEQA climate change analysis of the development, which provides a legally defensible and streamlined CEQA process for the project. Appendix C details screening tables for the City and is the source for GHG reductions specified below.

ACTIONS

- Educate City staff, developers, etc., on how the screening tables work and advantages in using the screening tables.
- Include screening tables in submittal packages for development projects and have developers select their choices of reduction measures within the screening tables to include in as a project’s conditions of approval.
- Establish online permitting to facilitate upgrades.



10.1: Screening Tables	
GHG Reduction Potential (2020)	1,003 MT CO ₂ e
GHG Reduction Potential (2035)	1,308 MT CO ₂ e
Co-Benefits	   



MUNICIPAL MEASURES

City operations make up a small percentage of the total communitywide GHG emissions, and therefore, the majority of the GHG reductions would result from the measures that are applied to the communitywide energy usage. Nevertheless, the City can set an example for its residents by improving the energy efficiency and reducing GHG emissions at its own facilities. This section summarizes the proposed reduction measures to be implemented by the City to further reduce its GHG emissions associated with energy consumption, water use, and transportation.

Goal M-1: Participate in Education, Outreach, and Planning Efforts for Energy Efficiency

MEASURE M-1.1 INCREASE ENERGY SAVINGS THROUGH THE SDG&E ENERGY EFFICIENCY PARTNERSHIP

The SDG&E Energy Efficiency Partnership Program is a framework that offers enhanced rebates and incentives to cities that achieve measurable energy savings, reduce peak-time electricity demand and plan for energy efficiency. The program has a tiered incentive structure with threshold criteria required to trigger advancement to the next level of participation.



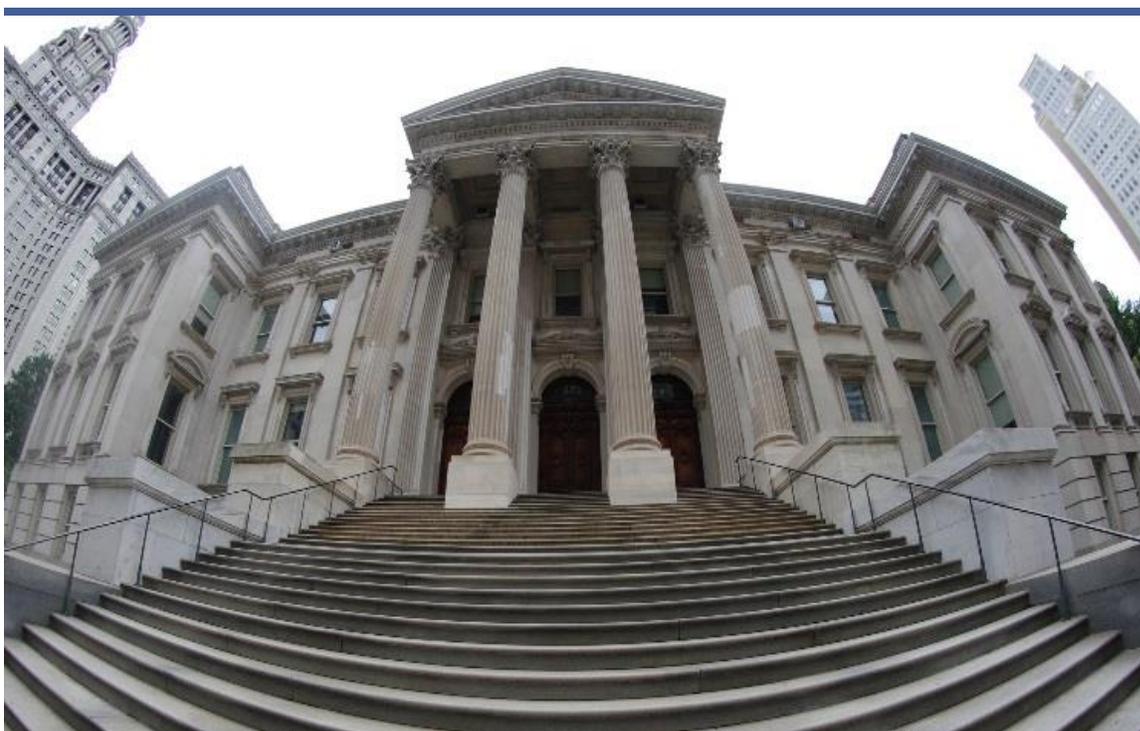
M-1.1: Increase Energy Savings through the SDG&E Energy Efficiency Partnership	
GHG Reduction Potential	Supporting Measure
Co-Benefits	 



Goal M-2: Increase Energy Efficiency in Municipal Buildings

MEASURE M-2.1: CONDUCT MUNICIPAL ENERGY AUDIT

Knowledge of building energy use is an effective way to determine energy inefficiencies and opportunities for retrofits and upgrades. Energy audits provide an improved understanding of energy use, reveal energy inefficiencies of the building or building energy appliances, and offer recommendations on how to improve or correct the energy inefficiencies through retrofits or upgrades. Therefore, energy audits should be conducted on a routine basis.



M-2.1: Conduct Municipal Energy Audits

GHG Reduction Potential

Supporting Measure

Co-Benefits





MEASURE M-2.2: PROCUREMENT POLICY FOR ENERGY-EFFICIENT EQUIPMENT

Energy efficient procurement policies can reduce government facility energy costs by about 5 to 10 percent.⁴⁰ As municipal appliances wear out, the City would replace them with Energy Star or energy efficient equipment. Energy Star offers an appliance calculator to estimate money and energy saved by purchasing its products.



M-2.2: Procurement Policy for Energy Efficient Equipment	
GHG Reduction Potential (2020)	19 MT CO ₂ e ⁴¹
GHG Reduction Potential (2035)	19 MT CO ₂ e
kWh Savings (2020)	48,450 kWh
Co-Benefits	

⁴⁰ Lawrence Berkeley National Laboratory, *Potential Energy, Cost, and CO₂ Saving from Energy-Efficient Government Purchasing*, 2002.

⁴¹ GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.1, Building Energy Use.



MEASURE M-2.3: INSTALL COOL ROOFS

Surfaces with low albedo, or solar reflectance, amplify the urban heat island effect. Many surfaces in an urban environment consist of buildings’ roofs. Roofs affect not only the temperature of the surrounding urban environment, but also the building’s interior temperature. Upgrading roofs to materials with high albedo can reduce outdoor and indoor temperatures, thereby also reducing energy demand for air conditioning. Replacing a 1,000-square-foot dark roof with a white roof can offset approximately 10 MT CO₂e.



M-2.3: Install Cool Roofs	
Rate of GHG Reduction Potential	10 MT CO ₂ e per 1,000 sq. ft. ⁴²
Rate of Estimated Energy Savings in 2020	28,319 kWh per 1,000 sq. ft.
Co-Benefits	

⁴² GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 10.1, General Plans.



MEASURE M-2.4: RETROFIT HVAC AND WATER PUMPING EQUIPMENT

The City could upgrade its heating, ventilation, and air conditioning (HVAC) systems to save energy. HVAC units, especially air conditioners, are large energy consumers. Applicable retrofits include converting central forced air conditioners into smart multi-zone systems and replacing inefficient HVAC equipment. The City has upgraded its HVAC system at City Hall, and will extend upgrades to other government buildings.



M-2.4: Retrofit HVAC and Water Pumping Equipment	
GHG Reduction Potential (2020)	12 MT CO ₂ e ⁴³
GHG Reduction Potential (2035)	12 MT CO ₂ e
kWh Savings (2020)	33,734 kWh
Co-Benefits	 

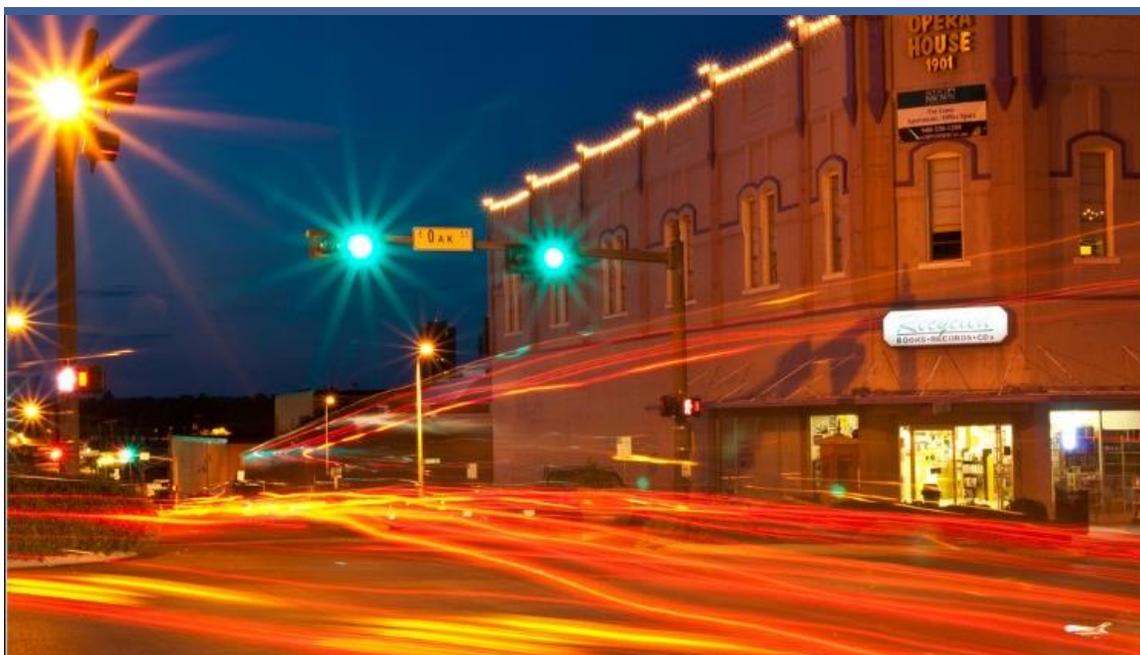
⁴³ GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.1 Building Energy Use.



Goal M-3: Increase Energy Efficiency in Community Buildings and Infrastructure

MEASURE M-3.1: TRAFFIC SIGNAL AND OUTDOOR LIGHTING RETROFITS

Up to 2011, the City has replaced almost 1,000 City-owned streetlights with more energy-efficient lighting. An upgrade of all 1,986 City-owned streetlights is ongoing. Other outdoor lights (e.g. traffic signals, park lighting, etc.) can or will also be retrofitted.



M-3.1: Traffic Signal and Outdoor Lighting Retrofits

GHG Reduction Potential (2020)	212 MT CO ₂ e ⁴⁴
GHG Reduction Potential (2035)	421 MT CO ₂ e
kWh Savings (2020)	600,000 kWh
Co-Benefits	

⁴⁴ GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 2.2, Lighting.



MEASURE M-3.2: UPGRADE OR INCORPORATE WATER-CONSERVING LANDSCAPE

The City can reduce water consumption and associated energy use by converting traditional landscaping to water-conserving landscaping. An average acre of lawn in the United States uses about 652,000 gallons of water per year.



M-3.2: Upgrade or Incorporate Water-Conserving Landscape	
GHG Reduction Potential	Supporting Measure
Co-Benefits	   



MEASURE M-3.3: PLANT TREES FOR SHADE AND CARBON SEQUESTRATION

Trees and vegetation naturally help cool an environment by providing shade and evapotranspiration (the movement of water from the soil and plants to the air) and reduce GHG emissions by sequestering CO₂. Trees planted near pavement can reduce surface temperatures of streets and parking lots, and trees planted strategically near windows or roofs of buildings can effectively reduce interior temperatures. The City could plant trees in City-owned spaces to reduce urban heat island effect and building energy use and increase carbon sequestration.



M-3.3: Plant Trees for Shade and Carbon Sequestration

GHG Reduction Potential (2020)

Supporting measure

Co-Benefits





Goal M-4: On-Road Energy Efficiency Enhancements; Employee Commute and Vehicle Fleet

MEASURE M-4.1: ENCOURAGE OR INCENTIVIZE EMPLOYEE CARPOOLS

The carpooling rate is as low as 3 percent for government employees of the City, and most people drive alone for work every day. Higher carpooling rates mean fewer VMT and GHG emissions, so encouraging carpooling by providing incentive and informational programs and necessary facilities such as preferred parking can be helpful.

ACTION

- City will develop an informational campaign to facilitate the development of car or van pools among employees.



M-4.1: Encourage or Incentivize Employee Carpools	
GHG Reduction Potential (2020)	6 MT CO ₂ e ⁴⁵
GHG Reduction Potential (2035)	14 MT CO ₂ e
VMT Savings (2020)	16,544 miles
Co-Benefits	

⁴⁵ GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.4, Commute Trip Reduction Programs.



MEASURE M-4.2: ENCOURAGE OR INCENTIVIZE PURCHASE OF HYBRID OR ELECTRIC VEHICLES

According to the employee commute survey, over 95 percent of government employees drive conventional gasoline or diesel vehicles, and only 1.5 percent of them plan to purchase an alternative fuel vehicle in the next year. Encouraging those employees to switch to any type of electrified vehicle would help reduce GHG by at least nearly 40 percent compared to conventional vehicles. The City will encourage employees to participate in the SDG&E and California Electric Vehicle (EV) incentive programs that provide rebates for the purchase of EVs.

ACTION

- City to develop non-monetized incentives for the purchase or use Hybrid or Electric Vehicles by City employees.



M-4.2: Encourage or Incentivize Purchase of Hybrid or Electric Vehicles	
GHG Reduction Potential (2020)	5 MT CO ₂ e
GHG Reduction Potential (2035)	11 MT CO ₂ e
VMT Equivalent ⁴⁶ Savings (2020)	13,188 miles
Co-Benefits	

⁴⁶ Hybrid vehicles are expected to reduce fuel usage by 50 percent, which is equal to reducing VMT by 50 percent.



MEASURE M-4.3: REPLACE OR SUPPLEMENT VEHICLE FLEET WITH HYBRID/ELECTRIC VEHICLES

The City’s vehicle fleet results in more than 20 percent of total municipal GHG emissions. As hybrid or electric vehicles emit far less GHG than conventional cars, encouraging the replacement of the conventional vehicle fleet can help reduce the City’s municipal GHG emissions greatly.

ACTION

- Within one year of the plan’s adoption, staff will present for City Council consideration a resolution committing to the phased replacement of all non-emergency, non-construction, and non-all-terrain vehicles with electric vehicles.



M-4.3: Replace or Supplement Vehicle Fleet with Hybrid/Electric Vehicles	
GHG Reduction Potential (2020)	7 MT CO ₂ e ⁴⁷
GHG Reduction Potential (2035)	16 MT CO ₂ e
VMT Equivalent ⁴⁸ Savings (2020)	19,268 miles
Co-Benefits	

⁴⁷ GHG reductions calculated using CAPCOA Quantifying GHG Mitigation Measures (CAPCOA 2010), Section 3.7, Vehicles.

⁴⁸ Hybrid vehicles are expected to reduce fuel usage by 50 percent, which is equal to reducing VMT by 50 percent.



MEASURE M-4.4: INSTALL E-VEHICLE CHARGERS

More e-vehicle chargers become an incentive for employees to purchase an alternative fuel vehicle and to replace the conventional vehicle fleet with e-vehicles. The city can reduce GHG emissions indirectly through this measure.

ACTION

- Within two years of plan adoption the City will develop and implement a plan for the placement of EV charging stations on City property.



M-4.4: Install E-Vehicle Chargers

GHG Reduction Potential (2020)	Supporting Measure
VMT Savings (2020)	
Co-Benefits	



Goal M-5: Reduce Energy Consumption in the Long Term

MEASURE M-5.1: ONGOING ACTIONS AND PROJECTED REDUCTIONS

Based on completed and planned GHG reduction projects between 2013 and 2020 that are listed and quantified above, the City expects to reduce GHG emissions by approximately 34 MT CO₂e annually. Assuming the City continues to achieve these annual reductions by continuing to implement committed measures and programs, it is projected that that the City could reduce energy related emissions by an additional 558 MT CO₂e below the baseline level by 2035.



M-5.1: Ongoing Actions and Projected Reductions	
GHG Reduction Potential (2035)	558 MT CO ₂ e
Co-Benefits	



SUMMARY OF REDUCTIONS

By implementing the Statewide and local reduction measures described above, the City would reduce its community-wide GHG emissions by 40 percent compared to the 2020 BAU emissions. Statewide measures reduce the City’s GHG emissions by 19 percent and the local measures reduce it an additional 21 percent. TABLE 10 and TABLE 11 **TABLE 11** summarize the strategies and the potential GHG reductions for community and municipal operations, respectively.

TABLE 10 Summary of Community GHG Reduction Strategies and Emission Reductions

Goals and Measures	2020 Emission Reductions (MT CO ₂ e)	2030 Emission Reductions (MT CO ₂ e)	2035 Emission Reductions (MT CO ₂ e)
Goal 1: Increase Energy Efficiency in Existing Residential Units			
1.1: Energy Efficiency Education and Best Practices	Supporting Measure		
1.2: Increase Community Participation in Existing Energy Efficiency Opportunities	45	45	45
1.3: Home Energy Evaluations	Supporting Measure		
1.4: Residential Home Energy Renovations	7,811	7,811	7,811
Goal 2: Increase Energy Efficiency in New Residential Units			
2.1: Energy Efficient Homes	5,102	13,534	17,750
Goal 3: Increase Energy Efficiency in Existing Commercial Units			
3.1: Energy Efficiency Training, Education, and Recognition in the Commercial Sector	Supporting Measure		
3.2: Increase Business Participation in Existing Energy Efficiency Programs	660	660	660
3.3: Non-Residential Energy Audits	Supporting Measure		
3.4: Non-Residential Retrofits	8,010	8,010	8,010
Goal 4: Increase Energy Efficiency in New Commercial Units			
4.1: Energy Efficient Businesses	1,442	8,705	12,337
Goal 5: Increase Energy Efficiency through Water Efficiency			
5.1: Water Efficiency through Enhanced Implementation of SB X7-7	1,279	1,366	1,409
5.2: Exceed Water Efficiency Standards	22	24	25
Goal 6: Decrease Energy Demand through Reducing Urban Heat Island Effect			
6.1: Tree Planting for Shading and Energy Efficiency	330	352	363
6.2: Light-reflecting Surfaces for Energy Efficiency	4	4	4
6.3: Carbon Sequestration through Preservation of Natural Lands	Supporting Measure		



TABLE 10 (Continued) Summary of Community GHG Reduction Strategies and Emission Reductions

Goals and Measures	2020 Emission Reductions (MT CO ₂ e)	2030 Emission Reductions (MT CO ₂ e)	2035 Emission Reductions (MT CO ₂ e)
Goal 7: Decrease Greenhouse Gas Emissions through Reducing Vehicle Miles Traveled			
7.1: Non-Motorized Transportation Options	438	395	373
7.2: Implement Bicycle Master Plan to Expand Bike Routes around the City	14,788	13,329	12,600
7.3: Ride Sharing Programs within Businesses	19,761	17,812	16,838
7.4: Electrify the Fleet	3,341	21,723	47,414
7.5: Complete Streets and Safe Routes to Schools Programs	5,477	4,937	4,667
7.6: Reduce Vehicle Trips To/From School	16,431	14,811	14,000
Goal 8: Decrease Greenhouse Gas Emissions through Reducing Solid Waste Generation			
8.1: Reduce Waste to Landfills	7,233	7,903	8,238
Goal 9: Decrease Greenhouse Gas Emissions through Increasing Clean Energy Use			
9.1: Clean Energy	Supporting Measure		
9.2: Community Choice Aggregation Program ¹	38,701	46,322	50,132
Goal 10: Decrease GHG Emissions from New Development through Performance Standards			
10.1: Screening Tables	393	1,003	1,308
Total Community Measures			
Total of All Measures Excluding CCA	92,569	133,135	155,605
Total of All Measures Including CCA	131,270	179,456	203,549

¹ CCA is separated from total of other reduction measures.

BAU = Business as Usual

CCA = Community Choice Aggregation

MT CO₂e = metric tons of carbon dioxide equivalent

SB = Senate Bill

TABLE 11 Summary of Municipal GHG Reduction Strategies and Emission Reductions

Goal and Measure	2020 Emission Reductions (MT CO ₂ e)	2035 Emission Reductions (MT CO ₂ e)
Goal M-1: Participate in Education, Outreach, and Planning Efforts for Energy Efficiency		
M-1.1: Increase Energy Savings through the SDG&E Energy Efficiency Partnership	Supporting Measure	
Goal M-2: Increase Energy Efficiency in Municipal Buildings		



M-2.1: Conduct Municipal Energy Audit	Supporting Measure	
M-2.2: Procurement Policy for Energy Efficient Equipment	19	19
M-2.3: Install Cool Roofs	Tracking Data	
M-2.4: Retrofit HVAC and Water Pump Equipment	12	12
Goal M-3: Increase Energy Efficiency in Community Buildings and Infrastructure		
M-3.1: Traffic Signal and Outdoor Lighting Retrofits	212	421
M-3.2: Upgrade or Incorporate Water-Conserving Landscape	Supporting Measure	
M-3.3: Plant Trees for Shade and Carbon Sequestration	Supporting Measure	
Goal M-4: On-Road Energy Efficiency Enhancements; Employee Commute and Vehicle Fleet		
M-4.1: Encourage or Incentivize Employee Carpools	6	14
M-4.2: Encourage or Incentivize Purchase of Hybrid or Electric Vehicles	5	11
M-4.3: Replace or Supplement Vehicle Fleet with Hybrid/Electric Vehicles	7	16
M-4.4: Install E-Vehicle Chargers	Supporting Measure	
Goal M-5: Reduce Energy Consumption in the Long Term		
M-5.1: Ongoing Actions and Projected Reductions	-	558
Total Municipal Measures		
Total of all Measures listed above	260	1,050

BAU = Business as Usual
 MT CO₂e = metric tons of carbon dioxide equivalent
 SDG&E = San Diego Gas & Electric

COMPARISON OF REDUCTIONS TO TARGETS

TABLE 12, TABLE 13, FIGURE 12 AND FIGURE 13 summarize the baseline 2005 community and municipal emissions, the projected 2020, 3030, and 2035 emission inventory, as well as the reduced 2020, 2030, and 2035 inventories after implementation of the reduction measures for community and municipal operations, respectively.

By 2020, without implementation of the CCA program, the Statewide and local measures together would reduce the City’s community GHG emissions from the 2020 BAU level to 259,537 MT CO₂e, which exceeds the 15 percent below 2005 levels reduction target of 288,976 MT CO₂e for 2020. Implementation of CCA would provide an additional 38,701 in MT CO₂e reductions. In 2030, without the CCA, implementation of Statewide and local measures together would reduce emissions from the 2030 BAU level to 206,379 MT CO₂e, which exceeds the 40 percent below 2005 levels reduction target of 249,596 MT CO₂e for 2030. Implementation of the CCA would provide an additional 46,322 MT CO₂e in reductions. In 2035, without the CCA, implementation of Statewide and local measures together would reduce emissions from the 2035 BAU level to 183,125 MT CO₂e, which would not meet the 49 percent below 2005 levels reduction target of 173,386 MT CO₂e for 2035. Implementation of the CCA would provide an additional 50,132 in MT CO₂e reductions and help the City meet the target.



TABLE 12 Community Emissions and Targets Comparison

	2005 MT CO ₂ e	2020 MT CO ₂ e	2030 MT CO ₂ e	2035 MT CO ₂ e
BAU Emissions	402,574	432,982	486,170	515,462
Reduction Target	--	288,976	249,596	173,386
State and Federal Reductions	--	80,876	146,656	178,919
Local Measures Reductions Excluding CCA	--	92,569	133,135	155,605
Total Adjusted Emissions Without CCA	--	259,537	206,379	183,125
Additional Reductions Needed	--	Target Met	Target Met	9,739
CCA Reductions	--	38,701	46,322	50,132
Total Adjusted Emissions With CCA	--	220,836	160,057	132,993
Additional Reductions Needed	--	Target Met	Target Met	Target Met

Notes and Acronyms:

BAU = Business as Usual

CCA = Community Choice Aggregation

MT CO₂e = metric tons of carbon dioxide equivalent

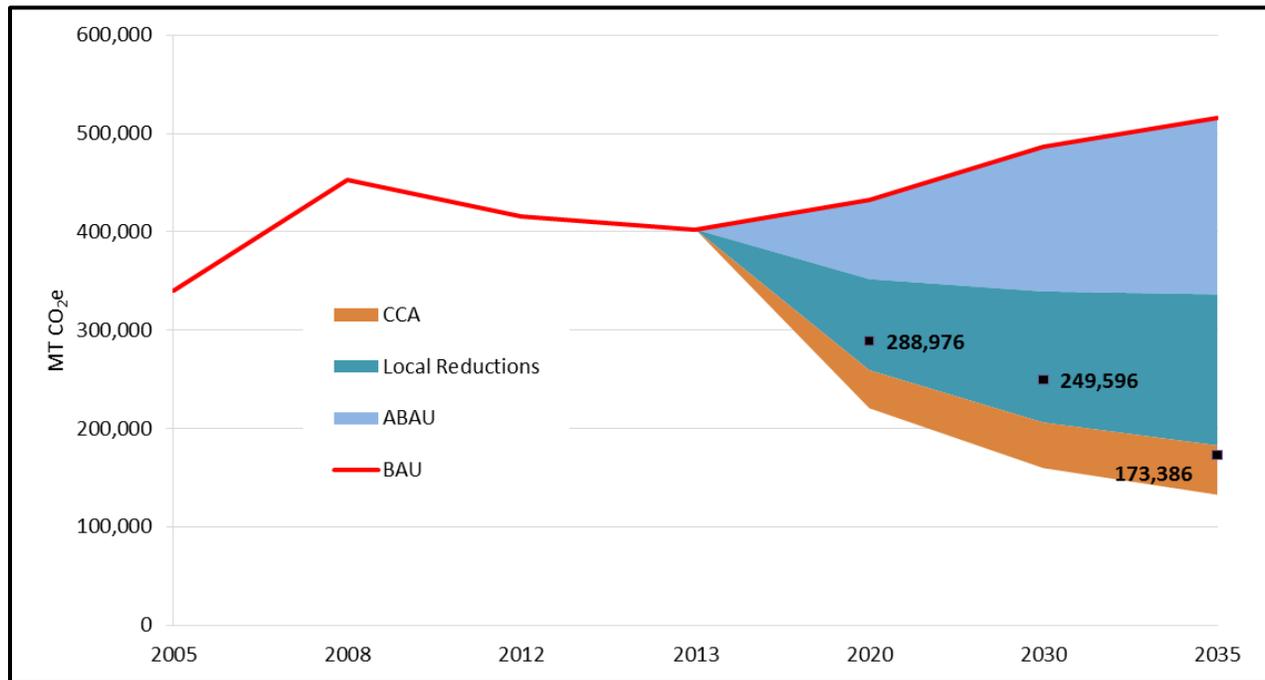


FIGURE 12 State and Local Reductions Comparison with Targets for Community

By 2020, the Statewide and local measures together would reduce the City’s municipal GHG emissions from the 2020 BAU condition by 31 percent, or 597 MT CO₂e. The total adjusted emissions would be 1,351 MT CO₂e, which would exceed the 15 percent below 2005 levels reduction target of 1,408 MT CO₂e for 2020. Implementation of additional measures beyond 2020



would result in a 69 percent or 1,400 MT CO₂e reduction below 2035 BAU. That would result in 631 MT CO₂e of emissions and would exceed its municipal operation 49 percent below 2005 levels target of 845 MT CO₂e by 2035.

TABLE 13 Municipal Emissions and Targets Comparison

	2005	2020	2035
	MT CO ₂ e	MT CO ₂ e	MT CO ₂ e
BAU Emissions	1,657	1,948	2,031
Reduction Target	--	1,408	845
State and Federal Reductions	--	337	350
Local Energy Efficiency Reductions	--	260	1,050
Total Adjusted Emissions	--	1,351	631
Additional Reductions Needed	--	Target Met	Target Met

Notes and Acronyms:

BAU = Business as Usual

MT CO₂e = metric tons of carbon dioxide equivalent

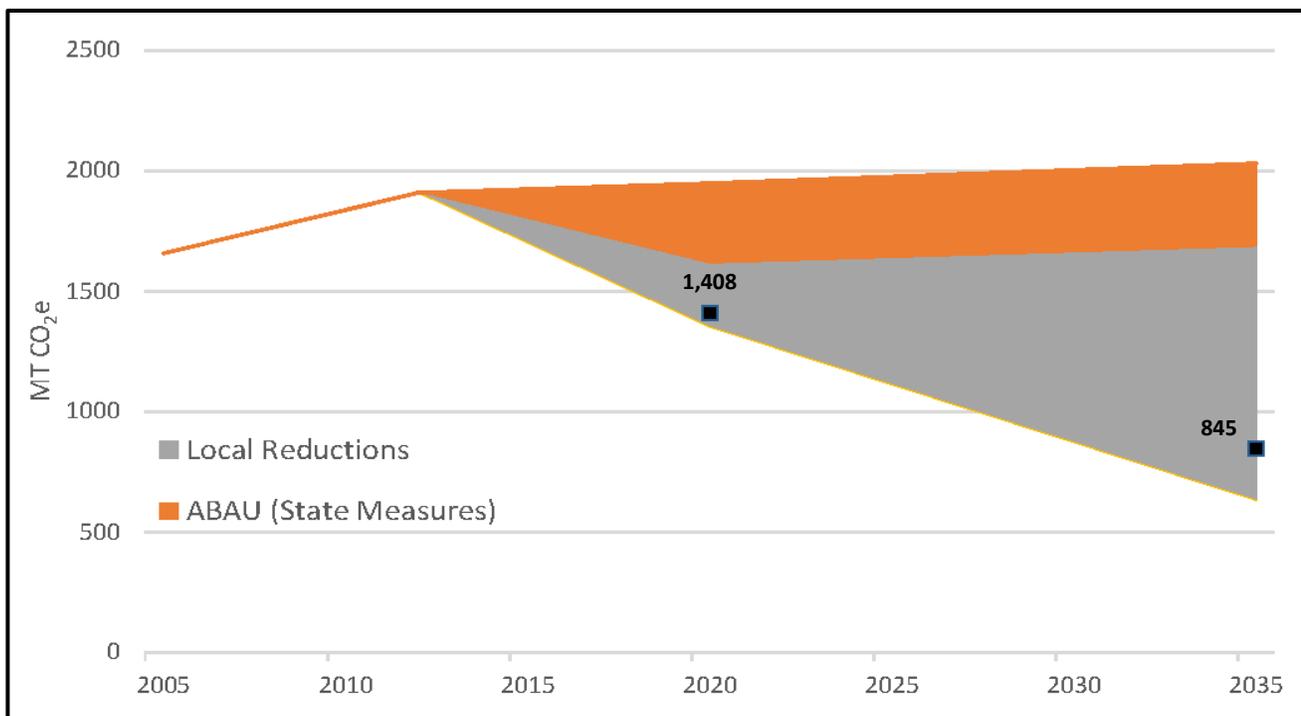


FIGURE 13 State and Local Reductions Comparison with Targets for Municipal Emissions



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CHAPTER 4 Adaptation

The City recognizes that planning sustainably is more than reducing GHG emissions; it also requires being prepared for changes that would impact the community's quality of life, use of resources, and economy. Preparedness, or adaptation, efforts seek to reduce vulnerability and increase the local capacity to adapt to changes. Therefore, this Plan summarizes changes in average and extreme weather that may occur in the next several decades and identifies actions to build resilience and adapt to those changes.

PROJECTIONS OF FUTURE CLIMATE

Studies show that California will experience warmer temperatures, increased drought, and more extreme weather events.⁴⁹ The impacts to the city will be similar.

The City may expect:

- **Increased temperatures**—By the end of this century, the average United States temperatures are predicted to increase by 3 °F to 12 °F, depending upon the amount of

⁴⁹ California Natural Resources Agency and California Energy Commission, *Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California*. CEC-500-2012-007. July 2012.



future emissions and how the earth responds to those emissions.⁵⁰ For California, the average annual temperature is expected to rise by 2.7 °F by 2050 and 4.1 to 8.6 °F by the end of the century.⁵¹ For the city, average temperatures are expected to increase between about 5 °F and 10 °F by the end of the century, depending on the emission scenario.⁵²

- **Variable precipitation**— Globally, future precipitation is highly variable, and California is no exception. Annual precipitation in California is expected to increase by more than 12 percent through the end of the 21st century. Most of this increase is expected in Northern and Central California; precipitation in Southern California is expected to decrease by 3.3 percent. All regions of California are expected experience wetter winters, with Southern California rain increasing by 11 percent during the rainy months of December, January, and February.⁵³
- **Increase in extreme weather events**—The historical number of extreme heat days (days over 99.9 °F) has been about four in Santee. By 2050, the number of extreme heat days in the city could increase to more than 12 per year, and by the end of the century, the number of extreme heat days could exceed 40 per year (FIGURE 14).⁵⁴ In addition the length of extremely hot days will increase. Historically, the maximum duration of heat waves in the city has been four, but may increase to 10 by mid-century and 20 to 45 by the end of the century.

⁵⁰ U.S. Global Change Research Program. 2014. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment*.

⁵¹ California Natural Resources Agency and California Energy Commission. 2012. *Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California*. CEC-500-2012-007. July.

⁵² Scripps Institution of Oceanography. 2017. Projected Temperatures Data Set (2017). Website: <http://cal-adapt.org/tools/annual-averages/#climatevar=tasmax&scenario=rcp85&lat=32.84375&lng=->.

⁵³ Allen, Robert J., and Rainer Luptowitz. 2017. "El Niño-like Teleconnection Increases California Precipitation in Response to Warming." *Nature Communications* 8 (July): 16055. doi:10.1038/ncomms16055.

⁵⁴ Scripps Institution of Oceanography. 2017 Projected Daily Temperature Data Set (2017), Website: <http://cal-adapt.org/tools/extreme-heat/#climatevar=tasmax&scenario=rcp85&lat=32.84375&lng=-116.96875&boundary=locagrid&units=fahrenheit>.

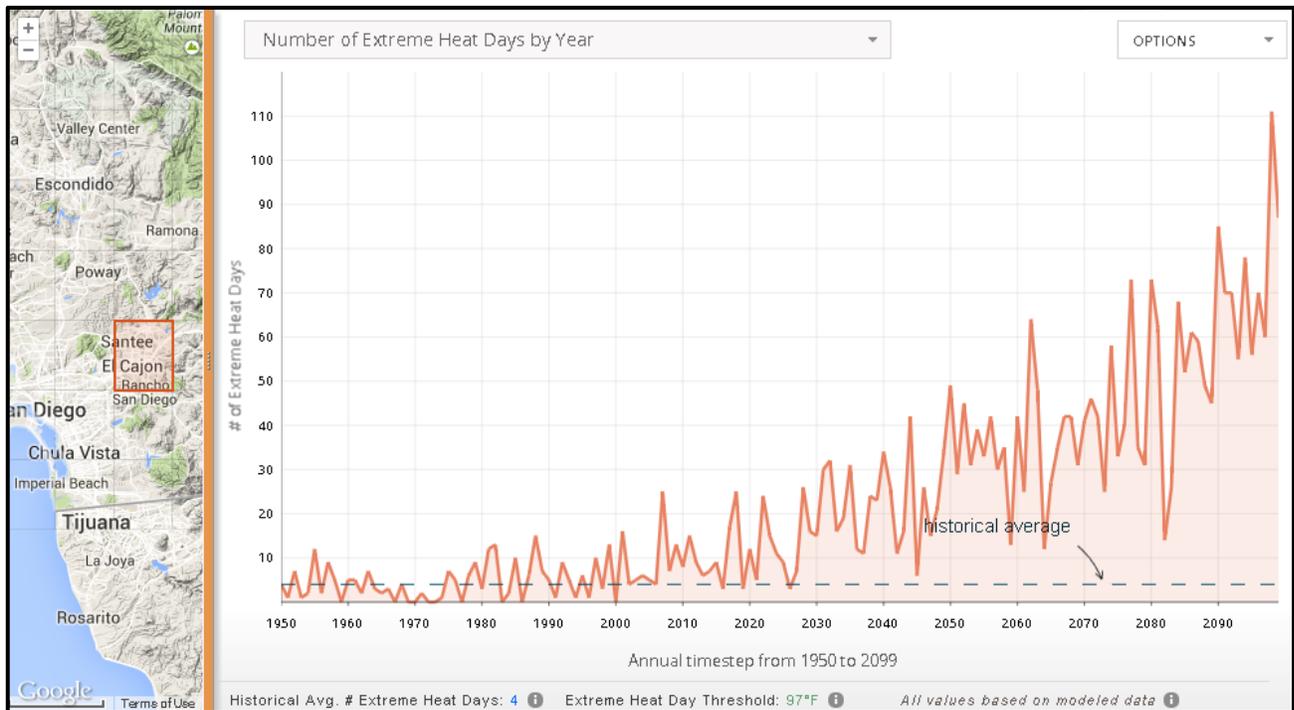


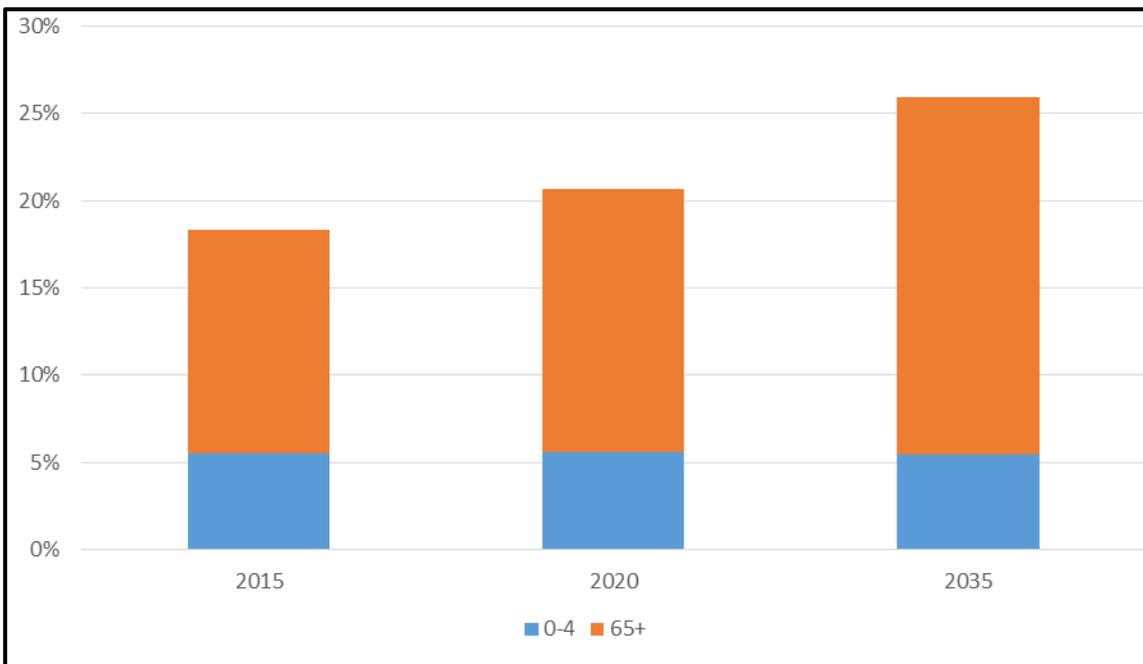
FIGURE 14 Number of Extreme Heat Days per Year

IMPACTS OF CLIMATE CHANGE AND ADAPTATION STRATEGIES

Increasing awareness and concern regarding potential climate change impacts has led to some policy responses and programs aimed at reducing GHG emissions at the City, including Executive Order S-13-08 discussed in Chapter 1. Impacts of climate change are already being seen and other more serious consequences are likely to occur in the future. The exact nature of the impacts is unknown and also depends on near-term emissions, but the most likely impacts to the State and to the City over the next century are discussed below along with strategies to reduce potential impacts or to build resiliency to impacts. To this end, the City of Santee is part of the regional *Multi-Jurisdictional, Multi-Hazard Mitigation Plan*.

Public Health & Safety

Periods of increased high temperatures or extended high temperatures can lead to increased heat-related, cardiovascular-related, and respiratory illnesses and diseases, and other health impacts. Emergency medical services and hospital visits also increase during heat waves. Changes in temperature are also expected to worsen air quality by increasing ozone and particulate matter concentrations, which can cause or exacerbate respiratory symptoms such as asthma attacks. The City recognizes that climate change will not impact all populations equally. Especially sensitive populations include the young (under 5 years of age) and the elderly (over 65), which constitute 19 percent of the 2015 population and will increase to more than 35 percent of the population by 2035 (FIGURE 15). Other populations that could be affected by extreme temperatures include outdoor workers such as construction and maintenance employees. This places limits on work hours and may require additional training for workers to expand their understanding of heat-related illnesses.



SOURCE: SANDAG Data Warehouse

FIGURE 15 Percentage of Santee's Population Considered Sensitive

Strategies

- Map neighborhoods that could be more vulnerable to the effects of climate change, such as flooding, fire, and the urban heat island effect is important in identifying high risk areas of the City.
- Create cooling centers at public spaces, such as libraries, for populations without air conditioning.
- Implement cooling technologies such as cool roofs and cool pavements.
- Strategically place shade trees near buildings, in parking lots, and along bike and pedestrian pathways.



Electrical Demand

In addition to the health and public safety risks, the City may face challenges to its energy supply due to warmer temperatures. Peak demand for electricity may increase due to the increased use of air conditioners in the City and other regions of SDG&E territory, which may cause brownouts or blackouts. Additionally, efficiencies of electricity generation and transmission decrease as air



temperatures increase, which further inhibit the ability of electric providers to meet increased demand.

Strategies

- Educate the public to become more energy efficient and reduce demand.
- Solar-based or other renewable energy sources to supplement the grid and to reduce peak demand on the grid.
- Improve building envelopes by adding insulation and placing trees to provide shade.
- Encourage cooling technologies.
- Increase the use of smart-meter devices to allow appliances to run on off-peak hours.



Water Availability

Water availability is and has been a vital economic, natural resource, and public health issue in California. Governor Jerry Brown declared a drought State of Emergency in January 2015 and the State Water Resources Control Board (SWRCB) announced in March 2015 water suppliers were encouraged to go beyond the minimum requirements to safeguard remaining water supplies. In April 2015, the Governor issued Executive Order B-29-15 that directs the SWRCB to implement mandatory water reductions to reduce water usage by 25 percent. Multiyear droughts decrease water supplies, while population growth exacerbates the problem by increasing demand. Supply limitations will only intensify as climate change causes reduced rainfall and increased temperatures. The San Diego County Water Authority, the wholesale supplier to San Diego County, expects demand to increase 22 percent between 2009 and 2035.⁵⁵

⁵⁵ San Diego County Water Authority. 2014. *San Diego County Water Authority Climate Action Plan*. p. 28. March.



Strategies

- Educate the public about water conservation.
- Encourage low-impact development.
- Expand water recycling and grey-water systems.
- Promote sub-metering in multifamily housing units.
- Promote conversion of turf grass to xeriscaping.



Infrastructure Damage

Cities, including Santee, rely on infrastructure for commuting, working, and other basic services. Roadways and buildings are built for long-term use; however, infrastructure is also susceptible to the impacts of climate change as it is generally built to meet historic climate conditions. Therefore, infrastructure is also vulnerable to climate change impacts. Much of the roadways and railways are dark or metal-based, conducting heat and raising temperatures well beyond the observed air temperature. Increased temperatures can cause pavement to soften and to expand, causing potholes. Railways can buckle under extreme heat, requiring trains to go slower to navigate the buckle or stop service for repairs. Flooding can also shorten the life of roadway infrastructure, require more maintenance, and cause traffic delays. Building infrastructure likewise may have shortened lifetimes due to flooding.

Strategies

- Evaluate infrastructure vulnerability based on current degradation and expected climate-related impacts.
- Prioritize and plan for infrastructure improvements.
- Identify alternative routes where infrastructure damage may occur.

Wildfire

Because California is expected to experience increased temperatures and reduced precipitation, there will likely be more frequent and intense wildfires and longer fire seasons. About one-third of the City of Santee is covered by open space, which is the type of land most vulnerable to wildfire. Effects from wildfire can include eye and respiratory illness, worsening asthma, allergies, chronic obstructive pulmonary disease, and other cardiovascular and respiratory diseases.

Homes and buildings near open space areas could also be threatened by future wildfires. All new buildings within a State Responsibility Area, Local Agency Very-High Fire Hazard Severity Zone, or Wildland-Urban Interface Fire Area designated by the enforcing agency must comply with all sections of the Wildland-Urban Interface Fire Area Building Standards. These standards provide a reasonable level of exterior wildfire exposure protection for buildings within these hazard areas and establish minimum standards for materials and material assemblies to lessen the vulnerability of a



building to resist the intrusion of flames and burning embers projected during a conflagration or wildfire.⁵⁶ Additional resources may be needed to combat additional wildfires in the region, including already-scarce water.

Strategies

- Educate the public on the importance of fire safety.
- Buffer zones between vegetation and structures and infrastructure.
- Identify fire-prone habitats, evaluate and plan for increased risk of larger and more frequent wildfires.



Social Equity

The City recognizes that some disadvantage populations (e.g., youth, elderly, low-income) may need special assistance in adapting to future climate changes. Disadvantage populations are more likely to be without air conditioning and may need assistance in accessing cooling locations, especially if they do not have cars or cannot drive. Disadvantaged populations may also face increased financial hardships with increased energy use. While the City may not be able to change the underlying factors of disadvantaged populations (e.g., age, health status, socio-economic) it can provide information and access to resources to help these populations adapt to future climate changes.

Strategies

- Increase public outreach and educational programs to inform the public of health and safety resources.
- Assist in facilitating access to cooling centers for the public.
- Provide information about available low-income weatherization programs and identify other outreach methods to increase visibility and familiarity with these programs.
- Educate the public on the benefits of improved occupant comfort and reduced utility bills.

⁵⁶ Department of Forestry and Fire Protection, Office of the State Fire Marshal. 2007. *Wildland-Urban Interface Building Standards Information Bulletin*. Website: http://www.fire.ca.gov/fire_prevention/downloads/IB_LRA_Effective_Date.pdf (accessed December 5, 2017).



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CHAPTER 5 Plan Implementation

This chapter describes implementation steps for the Plan to support achievement of the energy efficiency and GHG reduction goals for the community at large. Success in meeting the City’s energy efficiency and GHG emission reduction goals will depend on cooperation, innovation, and participation by the City and residents, businesses, and local government entities. This section outlines key steps that the City would follow for the implementation of this Plan.

Successful implementation of the Plan will require the following components. These are described in more detail the sections below.

- Administration and/or staffing
- Financing and budgeting
- Timelines for measure implementation
- Community outreach and education
- Monitoring, reporting, and adaptive management



ADMINISTRATION AND STAFFING

The Plan's success will require coordination with other regional agencies. The City will work with these agencies and will designate staff to oversee the successful implementation and the tracking of all selected GHG reduction strategies. The City will primarily be responsible for coordinating with contacts across departments to gather data, to report on progress, to track completed projects, and to ensure that scheduling and funding of upcoming projects is discussed at key City meetings. The City may identify one or more staff to act as the Plan Implementation Administrator(s) to guide monitoring, reporting, and dissemination of information to the public. Where possible, the City may use assistants from programs such as CivicSpark, an AmeriCorps program designed to build capacity for local governments to address climate change.

The Administrator could have the following responsibilities:

- Secure long-term financing for the energy efficiency and GHG reduction measures (i.e., grant application primary contact).
- Coordinate Plan implementation-related meetings.
- Serve as the external communication hub to local and regional climate action organizations, including SANDAG.
- Conduct public outreach to inform the community of the City's reduction planning efforts.
- Investigate methods to use existing resources and harness community support to better streamline implementation of the Plan.
- Monitor implementation of reduction measures and success of the Plan.
- Develop a protocol for monitoring the effectiveness of emission-reduction programs.
- Establish guidelines for reporting and documenting emission-reduction progress.
- Submit annual reports to the City Council.
- Develop a protocol for using the real-time information collected through the verification process to modify and revise existing reduction programs.
- Track State and federal legislation and its applicability to the City.

In general, the goal in implementing the Plan is not to create new administrative tasks or new staff positions necessarily, but rather to leverage existing programs and staff to the maximum extent feasible. The City would seek to fold GHG planning and long-term reduction into its existing procedures, institutional organization, reporting, and long-term planning.

FINANCING AND BUDGETING

Implementation of the local GHG reduction measures may require investment for the capital improvements and other investments, and increased operations and maintenance costs. However,



in some cases operating costs are anticipated to decrease, resulting in offset savings. This section presents a summary of funding and financing options (TABLE 14) available at the writing of this document. Some funding sources are not necessarily directed towards a City, but to a larger regional agency such as SANDAG, or a waste services provider serving multiple jurisdictions. The City would monitor private and public funding sources for new grant and rebate opportunities and to better understand how larger agencies are accessing funds that can be used for GHG reductions in their area. Leveraging financing sources is one of the most important roles the City can play in helping the community to implement many of the GHG reduction measures.

TABLE 14 Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
State and Federal Funds	
Federal Tax Credits for Energy Efficiency	<ul style="list-style-type: none"> ■ Tax credits for energy efficiency can be promoted to residents.
Energy Efficient Mortgages (EEM)	<ul style="list-style-type: none"> ■ An EEM is a mortgage that credits a home’s energy efficiency in the mortgage itself. ■ Residents can finance energy-saving measures as part of a single mortgage. ■ 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 are typically used to purchase a new home that is already energy efficient, such as an ENERGY STAR®-qualified home.
California Department of Resources Recycling and Recovery (CalRecycle)	<ul style="list-style-type: none"> ■ CalRecycle grant programs allow jurisdictions to assist public and private entities in management of waste streams. ■ Incorporated cities and counties in California are eligible for funds. ■ Program funds are intended to: <ul style="list-style-type: none"> ○ Reduce, reuse, and recycle all waste ○ Encourage development of recycled-content products and markets ○ Protect public health and safety and foster environmental sustainability
California Energy Commission (CEC)	<ul style="list-style-type: none"> ■ CEC has energy efficiency financing options for projects with proven energy savings. These options include 0% interest rate loans for K–12 school districts, county offices of education, State special schools, community colleges, and 1% interest rate loans for cities, counties, special districts, public colleges or universities, public care institutions/public hospitals, University of California campuses, and California State University campuses. ■ Projects eligible for the CEC energy efficiency financing low interest loans include: <ul style="list-style-type: none"> ○ Lighting system upgrades ○ Pumps and motors ○ Streetlights and light-emitting diode (LED) traffic signals ○ Building insulation ○ Heating, ventilation and air conditioning equipment ○ Water and waste water treatment equipment
California Air Resources Board (CARB)	<ul style="list-style-type: none"> ■ CARB offers several grants, incentives, and credits programs to reduce on-road and off-road transportation emissions. Residents, businesses, and fleet operators can receive funds or incentives depending on the program. ■ The following programs can be utilized to fund local measures:



TABLE 14 Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
	<ul style="list-style-type: none"> ○ Air Quality Improvement Program (Assembly Bill 118) ○ Carl Moyer Program – Voucher Incentive Program ○ Goods Movement Emission Reduction Program (Proposition 1B Incentives) ○ Loan Incentives Program ○ Lower-Emission School Bus Program/School Bus Retrofit and Replacement Account (Proposition 1B and United States Environmental Protection Agency Incentives)
Existing Capital Improvement Program	<ul style="list-style-type: none"> ■ State and federal funds would most likely continue to local governments, builders, and homeowners in the following forms: <ul style="list-style-type: none"> ○ Grants ○ Transportation and transit funding ○ Tax credit and rebate programs ○ The Capital Improvement Program can be utilized for measures relating to traffic or transit.
State Funding for Infrastructure	<ul style="list-style-type: none"> ■ The state’s Infill Infrastructure Grant Program may potentially be used to help fund measures that promote infill housing development. ■ Grants can be used for gap funding for infrastructure improvements necessary for specific residential or mixed-use infill development projects.
Transportation-Related Federal and State Funding	<ul style="list-style-type: none"> ■ For funding measures related to transit, bicycle, or pedestrian improvements, the following funding sources from SANDAG may be used. <ul style="list-style-type: none"> ○ Smart Growth Incentive Program ○ Active Transportation Grant Program ○ Job Access and Reverse Commute and New Freedom Programs
Utility Rebates	<ul style="list-style-type: none"> ■ SDG&E is one of the utilities participating in the Go Solar initiative. ■ A variety of rebates are available for existing and new homes. ■ Photovoltaics, thermal technologies, and solar hot water projects are eligible. ■ Single-family homes, commercial development, and affordable housing are eligible.
Energy Upgrade California	<ul style="list-style-type: none"> ■ The program is intended for home energy upgrades. ■ Funding comes from the American Recovery and Reinvestment Act, California utility ratepayers, and private contributions. ■ Utilities administer the program, offering homeowners the choice of one of two upgrade packages—basic or advanced. ■ Homeowners are connected to home energy professionals. ■ Rebates, incentives, and financing are available. ■ Homeowners can receive up to \$4,000 back on an upgrade through the local utility.
Private Funding	
Private Funding	<ul style="list-style-type: none"> ■ Private equity can be used to finance energy improvements, with returns realized as future cost savings. ■ Rent increases can fund retrofits in commercial buildings. ■ Net energy cost savings can fund retrofits in households. ■ Power Purchase Agreements involve a private company that purchases, installs, and maintains a renewable energy technology through a contract that typically lasts 15 years.



TABLE 14 Potential Funding Sources to Support GHG Reduction Measures

Funding Source	Description
	<p>After 15 years, the company would uninstall the technology or sign a new contract.</p> <ul style="list-style-type: none"> ■ On-Bill Financing (OBF) can be promoted to businesses for energy-efficiency retrofits. OBF funding is a no-interest loan that is paid back through monthly utility bills. Lighting, refrigeration, HVAC, and LED streetlights are all eligible projects.
Other Funding Mechanisms for Implementation	
Other Funding	<ul style="list-style-type: none"> ■ Increased operating costs can be supported by grants from the Strategic Growth Council or the State Department of Conservation to fund sustainable community planning, natural resource conservation and development, and adoption.
Future Funding Options: Funding Mechanisms for Capital and/or Implementation Costs	
New Development Impact Fees	<ul style="list-style-type: none"> ■ These types of fees may have some potential to provide funding, but such fees are best implemented when the real estate market and overall regional economic conditions are strong.
General Obligation Bond	<ul style="list-style-type: none"> ■ A general obligation bond is a form of long-term borrowing and could be used to fund municipal improvements.
AB 811 Districts Property-Assessed Clean Energy (PACE)	<ul style="list-style-type: none"> ■ Assembly Bill 811 is intended to help municipalities accomplish the goals outlined in Assembly Bill 32. ■ The 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. ■ Municipalities are authorized to designate areas where property owners can enter into contractual assessments to receive long-term, low-interest loans for energy and water efficiency improvements, and renewable energy installation on their property. ■ Financing is repaid through property tax bills. ■ AB 811 and the PACE program are currently on hold for residential properties due to potential violation of standard Federal Housing Finance Agency (FHFA) federally guaranteed (Fannie Mae/Freddie Mac) residential mortgage contracts. ■ SANDAG has implemented the Home Energy Renovation Opportunity (HERO; a PACE program) in the County to assist residents in financing residential energy efficiency and solar retrofits.

In addition to pursuing the funding options above and monitoring the availability of others, the City should take the following steps in order to best inform decisions related to the cost of GHG reduction measures:

- **Perform and refine cost estimates**—Cost estimates for local reduction measures should be performed to identify the cost-effectiveness of each measure to inform and guide the implementation process. This analysis will likely be based on a variety of participation, per-unit, and other assumptions. As programs are developed, cost estimates should be refined and updated over time with more precise implementation-level data.
- **Integrate GHG reduction into existing City budget and Capital Improvements Program**—Certain capital improvements may need to be added to the City’s Capital Improvements



Program CIP and facility master plan programs, as well as those of the City utility enterprises and other public agencies that have control for project implementation. For CIPs completely under the City's control, new projects would need to be assessed for consistency with the Plan.

- **Adopt or update ordinances and/or codes**—Some local reduction measures may require new or revised ordinances. Staff would need to coordinate these efforts in conjunction with other departments, other agencies, and the City Council.
- **Pursue outside funding sources**—A range of funding from State and federal agencies has been identified. The City would need to pursue these (and other emerging) funding sources as a part of implementation efforts.
- **Implement and direct preferred City funding sources**—While City funding sources are limited, the City, when financially able, as a part of its budget process, could appropriate funding from general sources or make changes in its fee schedules, utility rates, and other sources as needed to support funding the implementation of the GHG reduction measures.
- **Create monitoring/tracking processes**—Local reduction measures would require program development, tracking, and/or monitoring.
- **Identify economic indicators to consider future funding options**—Economic recovery may occur rapidly or slowly. Whatever the timeframe, the City would need to determine the point at which certain additional funding sources may become feasible and/or favorable. Identification and monitoring of economic indicators and trends, such as home prices, energy prices cost per kWh on solar installations, unemployment rates, or real wage increases, can help the City decide when to further explore the potential for funding local reduction measures through different financing mechanisms.

TIMELINE FOR MEASURE IMPLEMENTATION

After taking into account the reductions in energy and water usage and the GHG emissions resulting from Statewide measures, the City would need to implement the local reduction measures to reach its reduction targets.

The City has developed an implementation schedule for the local reduction measures. Prioritization was based on the following factors:

- Cost effectiveness
- GHG reduction efficiency
- Availability of funding
- Level of City Control
- Ease of implementation
- Time to implement



To encourage implementation of all reduction measures, City staff would develop a Plan Implementation Timeline. Measure prioritization could be based on the following factors.

- **Cost/Funding**—How much does the measure cost? Is funding already in place for the measure?
- **Greenhouse Gas Reductions**—How effective is the measure at reducing greenhouse gases?
- **Other Benefits**—For example, does the measure improve water quality or conserve resources? Would it create jobs or enhance community well-being?
- **Consistency with Existing Programs**—Does the measure complement or extend existing programs?
- **Impact on the Community**—What are the advantages and disadvantages of the measure to the community as a whole?
- **Speed of Implementation**—How quickly can the measure be implemented and when would the City begin to see benefits?
- **Implementation Effort**—How difficult will it be to develop and implement the program?

A qualitative appraisal of implementation effort for the City is also provided. Measures can be categorized based on the convention of low, medium, or high, with low-level measures requiring the least level of effort by the City and being the most likely to be pursued immediately (i.e., the low-hanging fruit). Sample criteria are shown in TABLE 15.

TABLE 15 Implementation Matrix

Implementation Effort Level	Sample Criteria
Low	<ul style="list-style-type: none"> ■ Requires limited staff resources to develop. ■ Existing programs in place to support implementation. ■ Required internal and external coordination is limited. ■ Required revisions to policy or code are limited.
Medium	<ul style="list-style-type: none"> ■ Requires staff resources beyond the typical daily level. ■ Policy or code revisions become necessary. ■ Internal and external coordination (e.g., with stakeholders, other cities or agencies, or general public) is necessary.
High	<ul style="list-style-type: none"> ■ Requires extensive staff time and resources. ■ Requires the development of completely new policies or programs and potential changes to the general plan. ■ Requires a robust outreach program to alert residents and businesses of program requirements and eligibility. ■ Requires regional cooperation and securing long-term funding.



COMMUNITY OUTREACH AND EDUCATION

The citizens and businesses in the City are integral to the success of the Plan and to overall GHG reduction for the region. Their involvement is essential, considering that several measures depend on the voluntary commitment, creativity, and participation of the community.

The City would educate stakeholders, such as businesses, business groups, residents, developers, and property owners, about the GHG reduction measures that require their participation, encourage participation in these programs, and alert them to program requirements, incentives and/or rebate availability, depending on the measure. City staff would schedule periodic meetings to facilitate formal community involvement in Plan implementation and adaptation over time. This could include focused meetings for a specific measure or program such as the PACE program and/or agenda items at City Council or other public meetings. These meetings would be targeted to particular stakeholder groups and provide information on Plan implementation progress as well as the implementation of a specific program or new policy. Alternatively, periodic written updates could be provided in City newsletters, SANDAG's newsletter, on City websites, or through other media communications with the general public, such as press releases and public service announcements. The public and interested stakeholders would be encouraged to suggest improvements or changes to the Plan. The City would also sponsor periodic outreach events to directly inform and solicit the input, suggestions, and participation of the community at large.

MONITORING, REPORTING, AND ADAPTIVE MANAGEMENT

Regular monitoring is important to ensure programs function as they were originally intended. Early identification of effective strategies and potential issues would enable the City to make informed decisions on future priorities, funding, and scheduling. Moreover, monitoring provides concrete data to document the City's progress in reducing GHG emissions. The City would be responsible for developing a protocol for monitoring the effectiveness of emission reduction programs as well as for undertaking emission inventory updates:

- **Update GHG Inventory**—The City would update inventory emissions using 2020 data to verify the achievement of GHG reduction goals. This includes regular data collection in each of the primary inventory sectors (utility, regional VMT, waste, wastewater, and water), and comparing the inventory to the City's baseline GHG emissions in 2005. The City would consolidate information in a database or spreadsheet that can be used to evaluate the effectiveness of individual reduction measures. Updated GHG inventories will be conducted every 3 to 5 years depending upon funding.
- **Track State Progress**—The Plan will rely heavily on State-level measures. The City would be responsible for tracking the state's progress on implementing state-level programs. Close monitoring of the real gains being achieved by state programs would allow the City to adjust its Plan, if needed.
- **Track Completion of GHG Reduction Measures**—The City would keep track of measures implemented as scheduled in the Plan, including progress reports on each measure, funding,



and savings. This will allow at least a rough attribution of gains when combined with regular GHG inventory updates.

- **Regular Progress Reports**—The City shall report annually to the City Council on Plan implementation progress. If annual reports, periodic inventories, or other information indicates that the GHG reduction measures are not as effective as originally anticipated, the Plan may need to be adjusted, amended, or supplemented.

TRACKING TOOLS

Screening Tables

The purpose of the screening tables is to provide a measurable way of determining if a development project is implementing the GHG Performance Standard and is able to quantify the reduction of emissions attributable to certain design and construction measures incorporated into development projects. The screening table assigns points for each option incorporated into a project as mitigation or a project design feature (collectively referred to as “feature”). The point values correspond to the minimum emission reduction expected from each feature. The menu of features allows maximum flexibility and options for how development projects can implement the GHG Performance Standard. Projects that earn enough points would be consistent with the reductions anticipated in the City’s Plan. The Screening tables are attached as Appendix C.

The City would use a screening tables tracker tool, which is a Microsoft Excel-based spreadsheet program that can be used to track implementation of the various menu options within the screening tables. This spreadsheet would allow the City to track cumulative points garnered by projects and to predict emission reductions. These values of reductions can then be input into the GHG Performance Standard within the Plan Implementation Tracker Tool (PITT) described in more detail below.

Plan Implementation Tracker Tool

The City’s PITT is a Microsoft Excel-based tool that would help the City track GHG reductions achieved through implementation of the GHG reduction measures within the Plan, to monitor the plan’s implementation progress, and to share findings with stakeholders, partners, and the community.

The PITT would help derive estimates for annual GHG reductions achieved by State, county, and local reduction measures to track progress toward meeting the City’s GHG reduction targets. This is achieved by inventorying GHG emissions, estimating reductions, monitoring trends over time, and revising actions based on results to achieve the reduction targets.

Tracking reductions should be done annually in order to demonstrate climate action planning leadership and initiative, to assist the State and the Region in meeting the reduction targets outlined under AB 32, to demonstrate Plan progress, to show and communicate results, and to adaptively manage the Plan’s implementation to ensure achievement of the reduction target.



Progress Reports

The Plan's effectiveness in reducing GHG emissions would be tracked with annual Progress Reports to the City Council which would be designed to outline the current status of each measure identified in the City's Plan. Progress Reports would be designed to be used in conjunction with the PITT; (e.g., the PITT tables and graphs as outputs can easily be pasted into the Plan's Progress Report). The annual report will address:

- Summary of changes in the regulatory framework during the past year
- The status of each implementation measure including all supporting actions
- A list of actions to be taken in the upcoming year
- In years where a GHG inventory was taken, a complete analysis of current emissions versus expected emissions under the plan shall be completed. Each measure and supporting action shall be reviewed for effectiveness. If necessary, revisions to existing measures and actions along with new measures/action would be proposed to ensure continuing progress toward GHG reduction targets.

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