



AGENDA REPORT

SAN CLEMENTE CITY COUNCIL MEETING
Meeting Date: August 21, 2018

Agenda Item 9-B

Approvals:

City Manager [Signature]

Dept. Head [Signature]

Attorney [Signature]

Finance [Signature]

Department: Community Development Department, Planning Division
Prepared By: Christopher Wright, Associate Planner

Subject: *UPDATE ON CLIMATE ACTION PLAN IMPLEMENTATION*

Fiscal Impact: None.

Summary: Staff to provide an update on the Climate Action Plan implementation status.

Background: On June 19, 2018 the City Council requested a status update and discussion of the Climate Action Plan's implementation on a future agenda. The Council also discussed taking a look at community choice energy, forms of renewable energy and progress towards future targets in the plan.

Discussion: On February 4, 2014 the City Council adopted a Climate Action Plan (CAP) with the Centennial General Plan. The CAP was prepared as a part of the General Plan update process to comply with the California Environmental Quality Act (CEQA) to reduce greenhouse gas (GHG) emissions from both municipal operations and community activities on relevant projects related to the General Plan. A CAP is now a required part of a General Plan in order to implement the various State initiatives to reduce GHG emissions. The CAP is linked with the City's Sustainability Action Plan, adopted in 2010, to address environmental sustainability for a coordinated, city-wide implementation of sustainable practices and technologies. The City's CAP was drafted to be a comprehensive plan to move from the previous business-as-usual growth practices to a more environmentally and economically sustainable growth model over time.

The CAP was prepared by assessing community and municipal emissions, and developing a plan to decrease these emissions utilizing the best technology and strategies available. The CAP included a 2009 baseline GHG inventory and established citywide emission greenhouse gas reduction goals for 2020 and 2030. To implement these goals, the CAP included a series of strategies, called implementation measures, designed to reduce local emissions.

The City is required to implement strategies and measures that are feasible. Typically, these are measures that result in better health outcomes (with pollution reductions), lower energy costs, improved access to transportation, recreational opportunities and general resource efficiency, such as energy use efficiency. The City's CAP does address these areas and will continue to do so with future updates to address new guidance from the State and improved efficiencies of technology over time.

Implementation

The CAP includes 10 different specific implementation measures related to four different categories of GHG reductions:

1. Alternative Transportation
 - Expand Pedestrian Network
 - Require Bicycling Parking
 - Develop Off-Street Bicycle Facilities
 - Incorporate Bike Lane Street Design
 - Encourage the Use of Electric Vehicles
2. Land Use
 - Encourage Planting of New Trees
3. Energy Efficiency
 - Residential and Commercial Retrofit Energy Conservation Policy
 - Residential and Commercial New Construction Energy Conservation Policy
 - Promote California Solar Initiative's Solar Water Heating Incentive Program
4. Waste Reduction Green House Gas Reductions
 - Waste Diversion Ordinance

Many of the prioritized near-term implementation measures of the CAP were anticipated to be implemented through code updates in subsequent years following adoption. For example recent updates to the California Building Code and Green Building Code have updated required bicycle parking, residential and commercial energy conservation and expedited solar permit processing in line with the implementation measures in the CAP. In the coming years, staff anticipates additional code updates, policy and program direction from the City Council to continue implementation of some measures. For more on the current status of implementation measures in the CAP see Attachment 1.

Community Choice Energy

Community choice energy is a program that the City could consider in the future that could bring local control and freedom to choose the supplier of electricity to the City in the energy marketplace. Potential implementation of community choice energy is something staff could look at as part of a future update of the Climate Action Plan should the City Council provide direction to do so. As part of community choice energy, staff would also likely consider other updates regarding renewable energy and energy efficiency in the CAP.

Monitoring

The most recent guidance from the State Office of Planning and Research recommends measuring emissions at 2020, 2035 and 2050 target years in a CAP to align with work done under State Senate Bill (SB) 375, Assembly Bill (AB) 32, SB 32

and other State programs. The existing CAP adopted in 2014 includes an inventory and discussion of emissions against the baseline 2009 inventory at 2020 and 2030. Considering the guidance from the State, in the next update of the Climate Action Plan, staff would need to look further out to the 2050 target year to consider more robust GHG reductions as, for example, significant energy use policies are anticipated to be phased in the future.

The State's guidance indicates that many CAPs are on a five year update cycle with tracking of inventories. The City's CAP recommended updating inventories on a five year cycle. Considering that the City first adopted a CAP in 2014 with the Centennial General Plan, this would indicate that the City should consider an update to the plan in 2019.

Staff Recommendations

Related to the CAP, staff would recommend the following for the City Council's consideration:

- Consider directing an update to the Climate Action Plan in a future budget year to update the greenhouse gas inventory to more closely monitor our current implementation status and to update 2020 and 2035 targets and a future 2050 target consistent with State guidance.
- Preparation of a future General Plan Amendment necessitated by updates to the Climate Action Plan related to community choice energy, renewable energy, energy efficiency or other issues.

Recommended

Action: STAFF RECOMMENDS THAT THE CITY COUNCIL PROVIDE DIRECTION TO STAFF AND THE PLANNING COMMISSION REGARDING THE CLIMATE ACTION PLAN.

Attachments: 1. Climate Action Plan Implementation Status
2. City of San Clemente Climate Action Plan

Notification: N/A

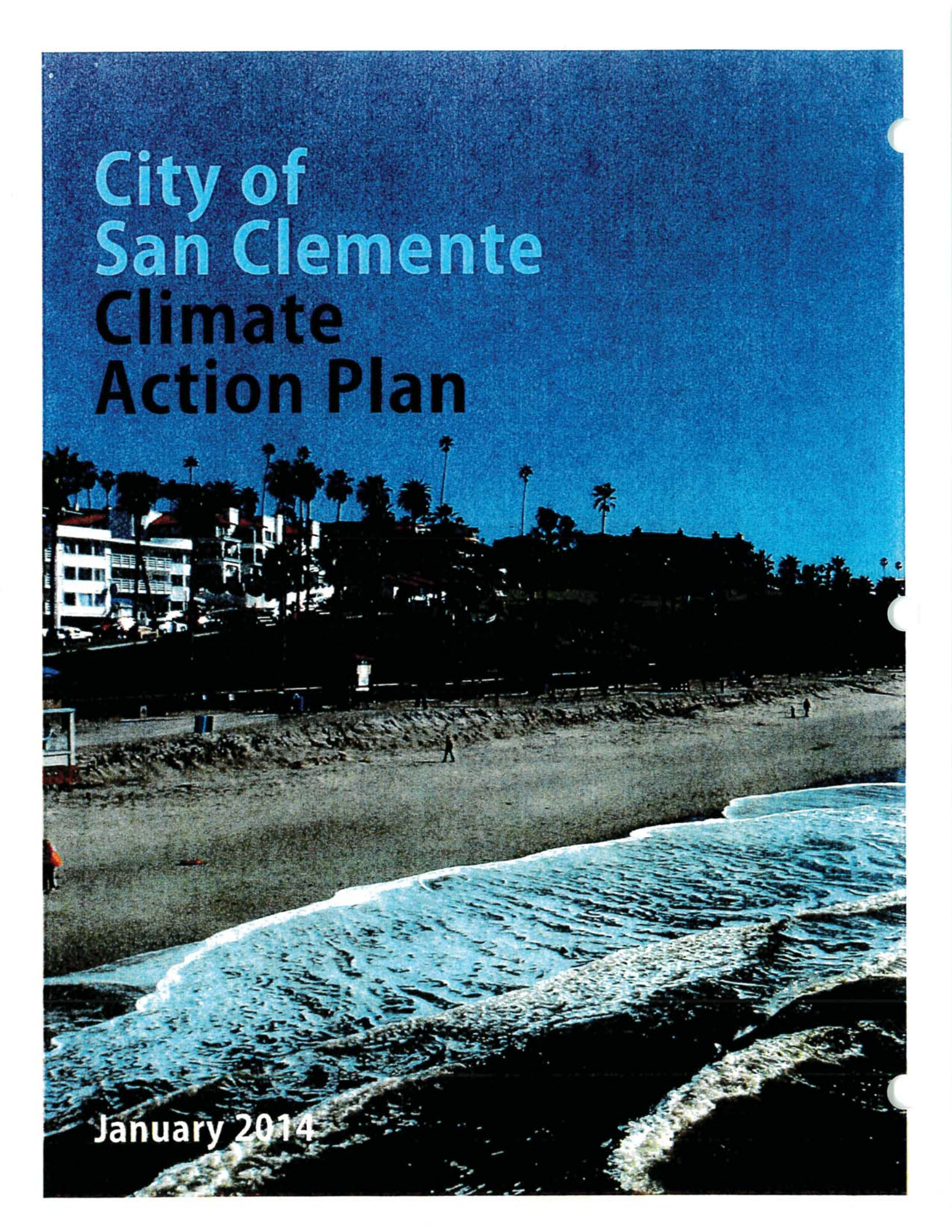
Climate Action Plan Implementation Status - Attachment 1

Recommended Local Greenhouse Gas Reduction Measures	Implementation	Responsible City Department	Implementation Timeframe		Implementation Status 2018
			2016	2020	2030
Transportation Greenhouse Gas Reduction Measures					
Expand Pedestrian Network	<p>The Bicycle and Pedestrian Master Plan, which contains the following policies that identify gaps in the network and prioritize construction activities:</p> <p>The City will prepare and maintain an inventory of sidewalk facilities to determine where pedestrian improvements are most needed to insure a continuous safe route for pedestrians throughout San Clemente.</p> <p>The City will continue to identify and repair sidewalks and public areas that have pedestrian hazards.</p> <p>The City will work towards closing existing gaps in San Clemente's pedestrian network.</p> <p>The City will identify weak links and discontinuities in the existing network and develop a plan to prioritize and fund solutions that improve or complete links.</p>	Public Works and Community Development		X	
			<p>The City continues to repair defects in sidewalks, and typically budgets about \$150,000 annually for such repairs under the 50-50 cost sharing program with adjoining property owners. The City also occasionally undertakes new projects to construct sidewalks where none currently exist to help fill in gaps in the public sidewalk network. Since adoption of the Centennial General Plan in 2014, about 3.5 miles of new sidewalk have been constructed.</p>		
Require Bicycle Parking	<p>One way to facilitate bicycle travel is to require bicycle parking for both public and private uses. This strategy would identify additional opportunities to place public use bicycle parking or to modify parking requirements for bicycle with the aim of increasing the supply of parking.</p> <p>This strategy applies to selected new developments within the City which are larger than an identified threshold in terms of building size, number of employees, or other applicable criteria.</p>	Community Development		X	
					<p>The 2016 California Green Building Code added bicycle parking standards that went into effect on January 1, 2017. These building code standards require short-term bicycle parking for new commercial projects or for addition or alteration which is anticipated to generate visitor traffic and long-term bicycle parking for new commercial projects with 10 or more tenant-occupants or for addition or alterations that add 10 or more tenant vehicular parking spaces being added. The Chase bank in Plaza Pacifica is an example of a project that included bicycle parking as a result of these requirements. In addition to the building code, the City can consider addressing bicycle parking standards in the zoning code in the phase 4 zoning update planned for 2019.</p>

Recommended Local Greenhouse Gas Reduction Measures	Implementation	Responsible City Department	Implementation Timeframe			Implementation Progress 2018
			2016	2020	2030	
Develop Off-Street Bicycle Facilities	<p>Another means to encourage bicycle travel is to develop and implement off-street bicycle trails which can be used for both recreational travel and commuting purposes. Some potential strategies that would be included in this category would include requiring buildings of certain size or adjacent to bikeways to include off-street bicycle paths or lanes in their plans and to construct them as part of their project approval.</p>	Public Works and Community Development		X		<p>Since adoption of the Centennial General Plan in 2014, the City has constructed 0.9 miles of Class I bicycle/pedestrian, and design is underway on a potential project to construct a 0.75 mile Class I bicycle/pedestrian path in FY2020. The City may consider bicycle standards in the phase 4 zoning update planned for 2019, including requirements for projects adjacent to existing or planned bicycle trails in the Bicycle and Pedestrian Master Plan. Also, bicycle trails and improvements may be considered as conditions of approval for development projects if appropriate.</p>
Incorporate Bike Lane Street Design	<p>The City's Bicycle and Pedestrian Master Plan incorporates bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments. These on-street bike accommodations will be created to provide a continuous network of routes, facilitated with markings and signage. The Bicycle and Pedestrian Master Plan, which will identify gaps in the network and prioritize bike lane siting and striping.</p>	Public Works and Community Development			X	<p>Since adoption of the Centennial General Plan in 2014, the City has added 12.5 miles of Class II bicycle lanes to public streets, and improved 18 miles of existing Class II bicycle lanes by adding buffer areas between the bicycle and vehicle lanes. Another 3.5 miles of new Class II bicycle lanes will be added by the end of FY2019, and another 1.3 miles of existing Class II bicycle lanes will get buffer areas by the end of FY2019.</p>
Encourage the Use of Electric Vehicles	<p>Consider designation and establishment of EV charging stations in applicable City projects. Consider development requirements for designation of preferential parking spaces and related plug-in chargers in public parking lots to support electric vehicle (EV) use and EV charging opportunities.</p>	Community Development and Public Works		X		<p>The 2016 California Green Building Code added electric vehicle charging facility standards that are being enforced. Since the code went into effect (January 1, 2017), certain residential projects and commercial projects with more than 9 parking spaces have been required to provide charging stations. For example, the Zov's restaurant project is required to provide a disabled van accessible charging parking space. In addition to the building code, electric charging standards can be considered in the phase 4 zoning update planned for 2019. Also, the City Council recently approved a project to install EV charging stations at City Hall, and the project will be completed by the end of FY2019.</p>

Recommended Local Greenhouse Gas Reduction Measures	Implementation	Responsible City Department	Implementation Timeframe			Implementation Progress 2018
			2016	2020	2030	
Land Use Greenhouse Gas Reduction Measure						
Encourage Planting of New Trees	Consider opportunities to plant trees in residential and commercial areas, with an emphasis on parking lots.	Community Development and Public Works		X		Development projects are reviewed for compliance with landscaping standards in the Municipal Code, including tree requirements. During the discretionary review process, staff looks for opportunities to add trees in parking lots, along street scapes, and as street trees. The estrella shopping center remodel is an example of a project where several trees were added to improve the parking lot and bring the site into closer compliance with landscaping standards. In addition, in 2019 the City's landscape zoning standards are anticipated to be updated and tree standards will be considered.
Energy Efficiency Greenhouse Gas Reduction Measures						
Residential and Commercial Retrofit Energy Conservation Policy	Develop a Residential and Commercial Retrofit Energy Efficiency and Conservation Policy that is voluntary.	Planning and Building Department		X	X	The 2016 California Energy Code went into effect on January 1, 2017, since the adoption of the Climate Action Plan. The code requires updated (more restrictive) energy efficiency standards to be met for building envelope, mechanical equipment and lighting when alterations and remodel improvements are made to residential and non-residential projects. In addition to state requirements, the City can consider energy efficiency and conservation requirements in a future update of the City building code, if directed and prioritized by the City Council.
Residential and Commercial New Construction Energy Conservation Policy	Develop a Residential and Commercial New Construction Energy Efficiency and Conservation Policy that is voluntary. If participation rates are not met, investigate converting to a mandatory ordinance.	Planning and Building Department		X		The 2016 California Energy Code requires all new residential and commercial construction to meet requirements for building envelope, mechanical equipment and lighting, and has mandatory requirements for certain buildings to be solar ready. In addition to state requirements, the City can consider energy efficiency and conservation requirements in a future update of the City building code, if directed and prioritized by the City Council.

Recommended Local Greenhouse Gas Reduction Measures	Implementation	Responsible City Department	Implementation Timeframe			Implementation Progress 2018
			2016	2020	2030	
Promote the California Solar Initiative's solar water heating incentive program	Develop a Residential and Commercial Retrofit Energy Efficiency and Conservation Policy that is voluntary.	Planning and Building Department	X	X		Solar projects receive expedited handling. Many solar panel projects are reviewed and permitted same day at the counter. Review/permit fees for residential solar projects are subsidized by the City. In addition, the City can consider providing other incentives, if directed and prioritized by the City Council. The City could consider a range of incentive options, such as promoting the California Solar Initiative program, City rebates, loans, and tax credits, or adopting on-bill finance programs through utility bills.
Waste Greenhouse Gas Reduction Measure						
Waste Diversion Ordinance	Adopt a Waste Diversion Ordinance that would require waste diversion of 75 percent by 2020 and 90 percent by 2030.	Public Works and Community Development	X	X		In 2017, the City's construction and demolition waste diversion ordinance was amended to require 75% of waste generated from each project to be diverted from landfills. As part of a future work program, the City may consider additional measures to divert other City waste, if directed and prioritized by the City Council.



City of San Clemente Climate Action Plan

January 2014

City of San Clemente Climate Action Plan



January 2014

Acknowledgements:

This Climate Action Plan was prepared for the City of San Clemente under the direction of project manager Tom Bonigut, Assistant City Engineer.

Prime consultant was Krout & Associates of San Diego, California. Project manager was Chandra Slaven, AICP, LEED AP (BD+C/O&M), Principal, with assistance from Dennis Larson, Senior Associate. Lena Ohta, Senior Project Manager, of Healthy Buildings International provided technical analysis. Fehr & Peers Transportation Consultants provided transportation support.

This document is intended to fulfill project scope requirements for the American Recovery and Reinvestment Act (ARRA) Energy Efficiency and Conservation Block Grant and with CEQA Guidelines Section 15183.5, which provides a framework for programmatic greenhouse gas emissions reduction plans.



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Introduction

California has taken several progressive policy steps to address climate change. State actions alone cannot solve climate change, however the adoption and implementation of this legislation demonstrates California's leadership in addressing the challenge. California's climate action goals are rooted in the California Global Warming Solutions Act, or AB32, which seeks to reduce state greenhouse gas emissions to 1990 levels by 2020, and the California Environmental Quality Act (CEQA), which requires that local governments consider the impact of greenhouse gases in proposed development projects and General Plan updates.

AB 32 does not require cities in California to complete Climate Action Plans. However, the Attorney General's Office has confirmed that Climate Action Plans are acceptable mitigation strategies for cities conducting General Plan Updates. Specifically, the Attorney General recommends that CAPs are prepared at the same time as a General Plan Update and EIR to expedite CEQA clearance for the GP. Further, the Attorney General urges cities to incorporate any Climate

Action Plans into their general plan to ensure that provisions are applied to all relevant projects.

In California, there are over 50 municipalities that are pursuing a similar climate response measure, by creating and adopting a Climate Action Plan (Office of Planning and Research, 2012). Similarly, major cities around the United States have implemented Climate Action Plans include Portland, Seattle, Chicago, New York, Miami, Denver, Pittsburgh, and Albuquerque.

The City of San Clemente's Climate Action Plan (CAP) is the first step in the development of a long range, comprehensive plan to move from business-as-usual growth practices to an environmentally and economically sustainable growth model. With that objective, the CAP provides a roadmap to reduce emissions that will complement California's climate change objectives.

The impacts of global climate change will include impacted air quality, diminished water supplies, higher seasonal temperatures, sea level increases, coastal erosion and potential loss of protected species and habitats. In response, the City has assessed community and municipal emissions, and has created a plan to decrease these emissions utilizing the best technology and strategies available today. The CAP includes a 2009 baseline greenhouse gas inventory and establishes citywide emission greenhouse gas reduction goals for 2020 and 2030. To implement these goals, the CAP includes a series of strategies designed to reduce local emissions.

Relationship to the City’s Centennial General Plan and the 2010 Sustainability Action Plan

The CAP is linked to the City’s Centennial General Plan (GP) and 2010 Sustainability Action Plan (SAP). The GP remarks on the critical role the natural environment plays in sustaining community lifestyle and the local economy. As such, the 2013 CAP builds upon the environmental values set forth in the GP. In addition to the GP, the SAP serves as an overall roadmap for San Clemente to increase sustainability of its operational practices. Both the CAP and the SAP focus on water, energy, and waste consumption as areas targeted for action. Moreover, both the SAP and the CAP will benefit public and environmental health. All plans identify community engagement and ownership of San Clemente’s environment as a key to success.

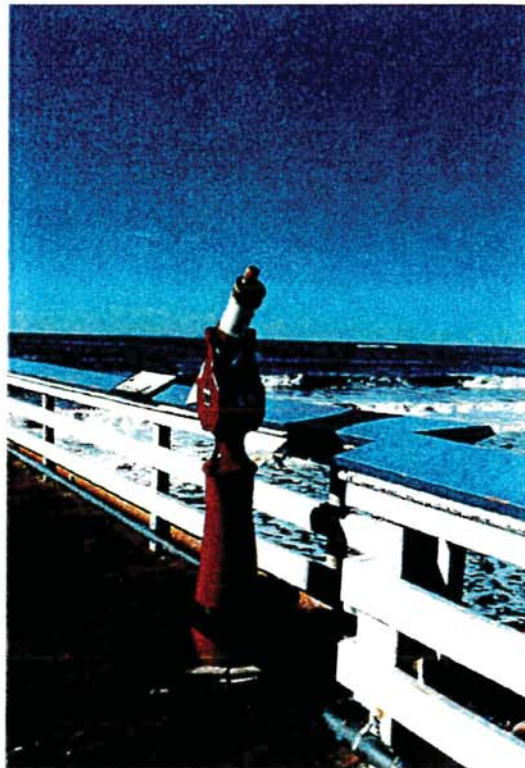
Relationship to the California Environmental Quality Act (CEQA)

In 2010, CEQA published updated amendments that added greenhouse gas emissions to the list of environmental impacts that jurisdictions are required to examine. The CEQA amendments require that GHG significance be assessed at both a project and a cumulative level. According to CEQA, one option for evaluating GHG significance is by testing for compliance and consistency with a Climate Action Plan.

If a lead agency wants to rely on its CAP as a threshold, it is important that CAP emission reduction targets

are consistent with AB 32 and that mechanisms for oversight and monitoring of each reduction measure are included to evaluate GHG emissions reduction progress. San Clemente’s approach to emission reduction is consistent with the climate change planning process. This process is:

1. Complete a baseline GHG inventory and forecasting future emissions;
2. Establish a citywide GHG reduction target;
3. Develop a CAP that creates strategies to meet the reduction target;
4. Evaluate the CAP’s environmental impact; and
5. Include monitoring and enforcement measures in the Climate Action Plan.



Primer on California Climate Legislation

Executive Order S-3-05 states that California is vulnerable to the effects of climate change, including reduced snowpack in the Sierra Nevada Mountains, exacerbation of California's existing air quality problems, and sea level rise. To address these concerns, the executive order established statewide targets to reduce GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

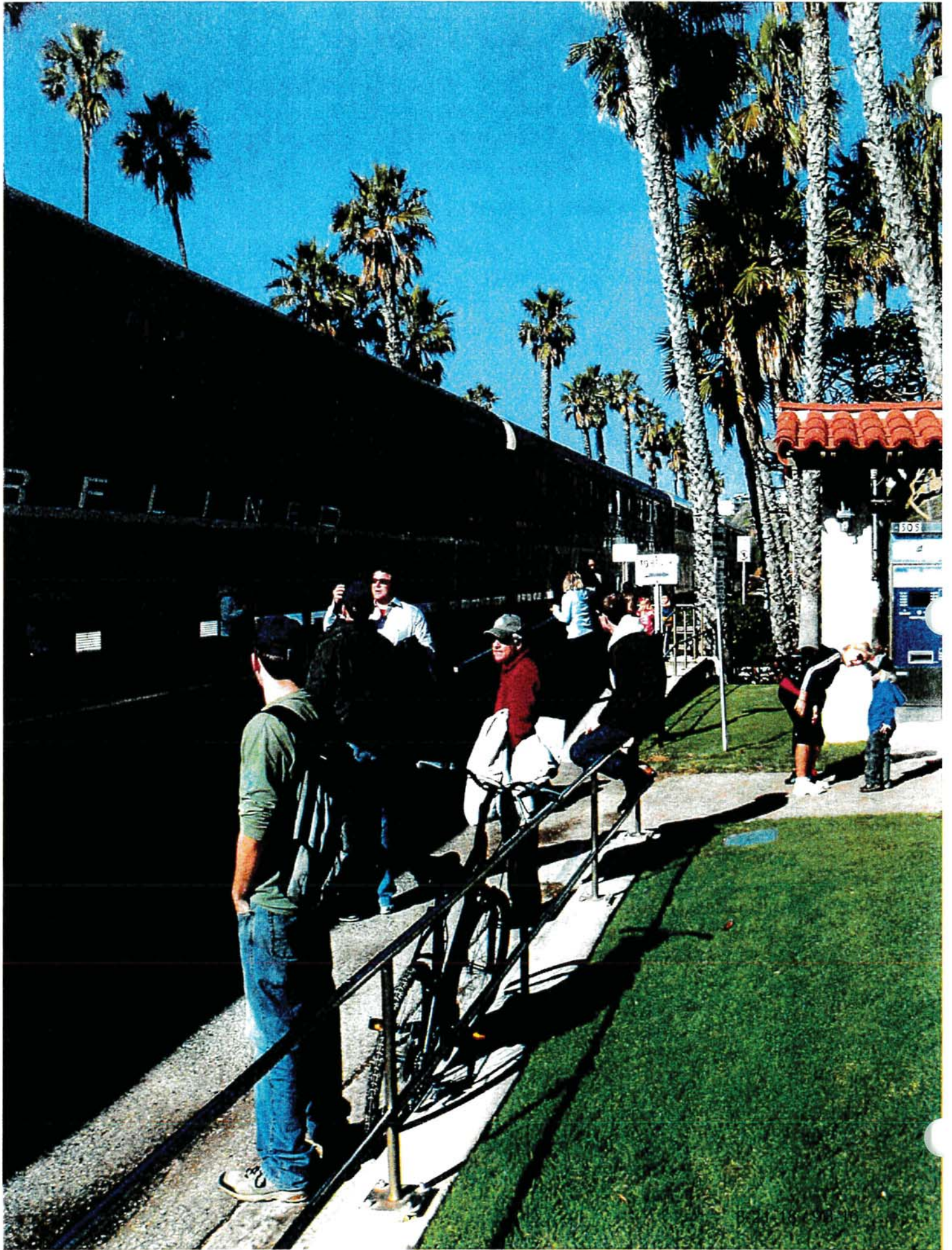
Assembly Bill 32 requires California to reduce statewide GHG emissions to 1990 levels by 2020, and directs the Air Resources Board (ARB) to develop and implement regulations to reduce statewide GHG emissions. ARB's Scoping Plan identifies California's cities and counties as "essential partners" within the overall statewide effort and recommends that local governments set a GHG reduction target of 15 percent below 2005-2008 levels by the year 2020.

Senate Bill 375 established a process to establish regional targets for reduced passenger vehicle and light duty truck GHG emissions for each Metropolitan Planning Organization in the state, including the Southern California Association of Governments (SCAG). The Air Resources Board targets for the SCAG region include an eight percent per capita reduction by 2020 and a 13 percent per capita reduction by 2035.

Senate Bill 97 acknowledges that climate change is a prominent environmental issue that requires analysis under the California Environmental Quality Act (CEQA). CEQA Guidelines were updated in 2010 to include provisions for mitigating GHG emissions and/or the effects of GHG emissions.

Background on Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions are both naturally occurring and anthropogenic greenhouse gas emissions. Such things as decomposition of organic material and volcanic eruptions contribute to GHG in the atmosphere. Over the eons, the natural world had developed a balance between natural GHGs released and the mechanisms that absorbed it. The anthropogenic GHG emissions are primarily from our use of fossil fuels, deforestation, and farming and ranching practices. The "greenhouse effect" is the result of a tight blanket of gasses in the atmosphere that trap incoming solar radiation (heat). The human contribution of GHG has amplified this effect and the increased heat it is causing has already been observed and measured. Absent action, it will continue to increase. This trapped heat impacts the climate in a number of ways, including changing the patterns of airflow and ocean currents. Emissions remain in the atmosphere for about 100 years, and so the impacts we are experiencing today are from the activities of previous generations.



2

Reducing Emissions

2009 Baseline Inventory

To measure greenhouse gases in San Clemente, the city commissioned a baseline greenhouse gas inventory to quantify emissions from all municipal and community sources. The purpose of an inventory is to identify source types, distribution, and overall magnitude of GHG emissions to enable policy makers to implement cost-effective GHG-reduction strategies in policy areas over which they have operational or discretionary control.

The City's community and municipal inventories were prepared for the year 2009, as this was the most recent year that complete utility records were available. Selecting 2009 as the baseline year allowed the inventory to capture the impact of the economic recession on GHG emissions. The inventory was prepared using the Local Government Operations Protocol (LGOP), which was designed to assist local governments in quantifying and reporting GHG emissions. The GHG inventory used emissions factors recommended by the US Environmental Protection Agency

(EPA) and the Intergovernmental Panel on Climate Change (IPCC), among others, to estimate CO₂e emissions for municipal operations and community activities.

The results of the inventory were broken down into emissions sectors under the City's jurisdiction that the CAP will target for reduction. City staff and the consultant team collected data from various sources, including City departments, public utilities, and private entities that provide services to and within the community. Data collection included activities specific to municipal operations (e.g. local government energy use, vehicle fuel use/mileage, water use, and solid waste disposal) and communitywide activities (e.g., total citywide energy use, vehicle miles traveled (VMT), solid waste disposal, water use, and wastewater generation) that occurred in 2009.

The breakdown of GHG emissions in the community is very similar to that of other Southern California cities. Due to the very high frequency of single-occupancy vehicles on the road, the transportation sector results in the largest output of GHG emissions, followed by the energy sector (electricity and natural gas).

San Clemente's baseline greenhouse gas emissions for 2009, expressed in terms of metric tons of carbon dioxide equivalent (MT CO₂e) totaled 620,024.

Per-capita emissions for the City were 10 MT CO₂e/person in 2009.

Municipal operation contributed 5,995 MT CO₂e, which is less than 1 percent of the total communitywide GHG emissions. The primary source of municipal GHG emissions is energy consumption.

Figure 2.1: 2009 Community-wide Emissions Inventory

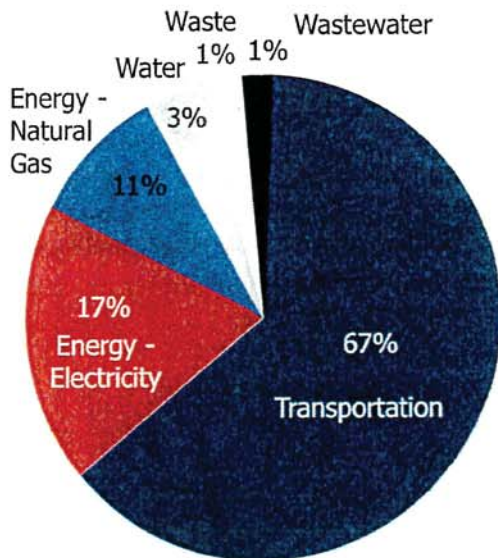
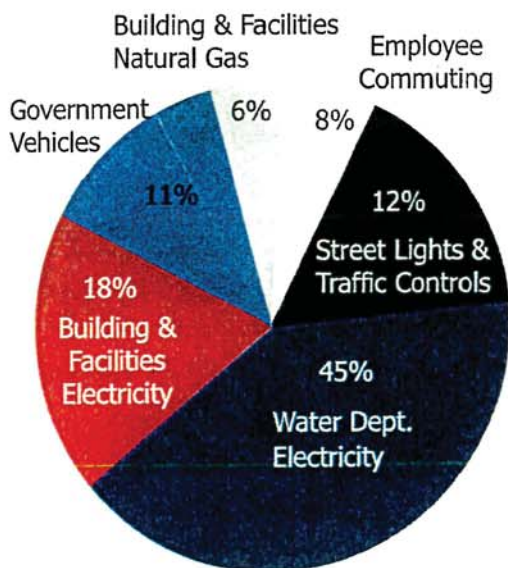


Figure 2.2: 2009 Municipal Emissions Inventory



2020 and 2030 Forecasts

San Clemente conducted a forecast emissions scenario under business-as-usual (BAU) conditions. The City then determined growth conditions derived from historical trends in population, employees, energy consumption, and land use. The CAP outlines forecasts for 2020 and 2030 (build out of the Centennial General Plan) to comply with federal, state, and local regulations (i.e., AB 32 and SB 375).

The City anticipates an increase in emissions by approximately 0.3 percent for 2020 and 0.8 percent for 2030. Forecast emissions do not show a significant increase, because the population is expected to remain relatively stable.

2020 and 2030 Reduction Targets

The City of San Clemente utilized California emissions reduction targets to guide the development of the City’s CAP. Because 2009 serves as the year of the baseline inventory, the reduction targets are expressed as percent reductions below 2009 levels.

2020 Target: 15 percent below 2009 Levels

Selecting a reduction target that calls for GHG emissions to be 15 percent below 2009 levels by 2020 offers the following benefits:

- Consistent with current guidance offered by ARB and the California Attorney General’s Office.
- Demonstrates contribution to State AB 32 GHG emissions reduction goals for 2020.

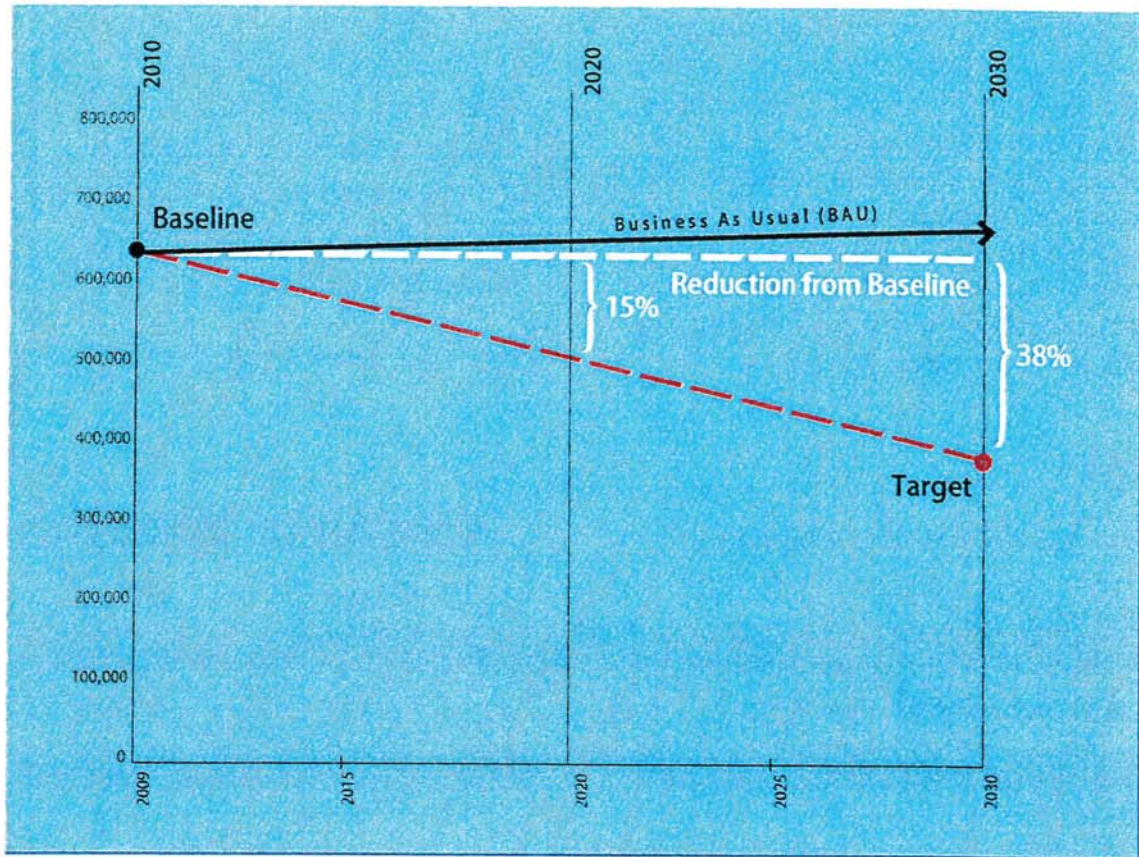


Figure 2.3: Projected Targets and GHG Emissions Reduction

Achieving a 15 percent reduction below 2009 levels would require emissions to be reduced by approximately 93,004 MT CO₂e/year from existing levels by 2020.

2030 Target: 38 percent below 2009 Levels

A target that strives to reduce GHG emissions to 38 percent below 2009 levels by 2030 provides the following benefits:

- Demonstrates a trajectory toward the State’s long-term (EO-S-3-05) emissions reduction goals.
- Consistent with the guidance offered by the California Attorney General’s Office
- Aligns with the City of San Clemente Centennial General Plan planning horizon.

These forecast years for 2020 and 2030 reflect federal, state, and local regulations (i.e., AB 32 and EO S-3-05) and coincide with the build out of the Centennial General Plan. Combined Citywide and Statewide reduction measures are expected to decrease emission by 17 percent in 2020 and 43 percent for 2030. Reduction measures for 2020 are included in the values for 2030.

Achieving the 38 percent reduction below 2009 levels would require emissions to be reduced by approximately 235,609 MT CO₂e/year from existing levels by 2030.

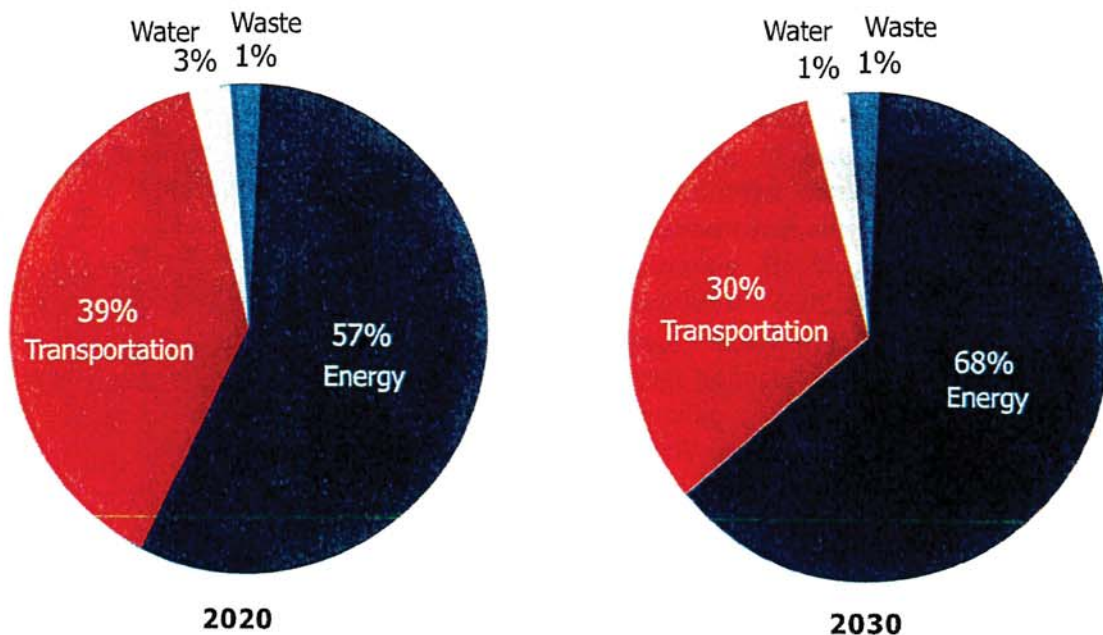
Table 2.1: GHG Emissions Breakdown

	2020	2030
	MT CO ₂ e	MT CO ₂ e
2009 Baseline Inventory	620,024	620,024
Reduction Targets (15% / 38%)	-93,004	-235,609
Reduction Targets from 2009 Baseline	527,020	384,415
2009 Baseline Inventory	620,024	620,024
Forecasted Growth from 2009 Baseline	+7,934	+12,760
Business-as-Usual Forecasted Emissions	627,958	632,784
Total Emissions Reductions (Refer to Table 2.2)	-109,999	-267,490
Total Emissions AFTER Reduction Measures	517,959	365,294
Reduction Targets from 2009 Baseline	527,020	384,415
Total Emissions AFTER Reduction Measures	517,959	365,294
Exceedance Beyond 2020/2030 Targets	9,061	19,121

Table 2.2: Total GHG Emissions Reductions

	2020		2030	
	MT CO ₂ e Reduction	% of total Reduction	MT CO ₂ e Reduction	% of total Reduction
Measure 1: Alternative Transportation				
1.1 Combined Transportation Measures	4,200	5%	4,223	2%
Measure 2: Energy Efficiency				
2.1 Residential Efficiency Retrofits	3,487	3%	8,746	3%
2.2 Commercial Efficiency Retrofits	1,796	2%	4,549	2%
2.3 Residential New Construction Efficiency	2,044	2%	6,216	2%
2.4 Commercial New Construction Efficiency	1,611	1%	4,900	2%
2.5 Residential Solar Water Heaters	5,505	5%	19,342	7%
Measure 3: Waste Reduction				
3.1 Expand Waste Material Diversion	1,538	1%	2,156	1%
Total Local Reduction Strategies	20,181	18%	70,313	26%
State Reduction Measures				
CA Renewable Portfolio Standard	40,894	37%	40,894	15%
CA Electricity Energy Efficiency Standards	5,487	5%	16,071	6%
CA Natural Gas Efficiency Standards	1,361	1%	6,064	2%
CAFE (Pavley) & LCFS	37,903	35%	41,758	16%
Water Conservation Program	3,372	3%	3,372	1%
Total State Reduction Measures	89,018	82%	197,177	74%
Total GHG Emission Reductions	109,199	100%	267,490	100%

Figures 2.4 and 2.5 breaks down the various GHG emission reductions by sector for both 2020 and 2030.



Reduction Measures

The majority of emissions reductions in San Clemente will be achieved through state measures. California has implemented the following measures targeted at statewide GHG reduction:

Federal Corporate Average Fuel Economy

The US EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) joint rule established a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that has already reduced GHG emissions and improved fuel economy.

Federal Alternative Fuels Strategies

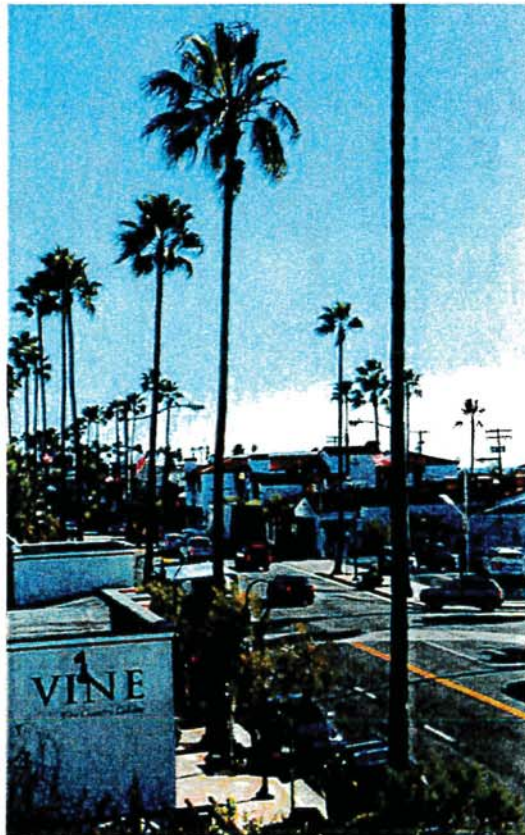
Based on current GHG emission reporting guidelines, the transportation sector directly accounted for about 28 percent of total U.S. GHG emissions in 2006, making it the second-largest source of GHG emissions, behind only electricity generation (34 percent). An alternative fuel, as most generally defined, is any fuel other than the traditional selections, gasoline and diesel, used to produce energy or power. The federal government via the EPA has a renewable fuel standard program (RFS2) from 2010 adopted under the EP Act of 2005 requiring a certain volume of renewable fuel especially bioethanol to be blended into gasoline by 2012 and 36 billion gallons by 2022. However, in November 2013 these requirements were reduced due to increases in feedstock prices.

California Renewables Portfolio Standard

Established in 2002 under SB 1078, accelerated in 2006 under SB 107 and expanded in 2011 under SB 2, California's Renewables Portfolio Standard (RPS) requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020.

California Low Carbon Fuel Standards

Executive Order S-1-07, the LCFS calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.



California Energy Commission and California Air Resources Board Vehicle Maintenance Recommendations

The California Legislature required a California measure to reduce petroleum dependence, including increasing transportation energy efficiency by adhering to specific vehicle use and maintenance recommendations.

California Air Resources Board Heavy Duty Vehicle Regulations

Adopted in December 2008, this regulation requires improvements in heavy-duty vehicles. The regulation is expected to reduce greenhouse gas emissions by approximately 1 million metric tons of CO₂e by 2020, statewide. Between now and the end of 2020, after the rule has been in effect, it is estimated that truckers and trucking companies will save about \$8.6 billion because diesel fuel consumption will be reduced by as much as 750 million gallons in California and 5 billion gallons across the nation.

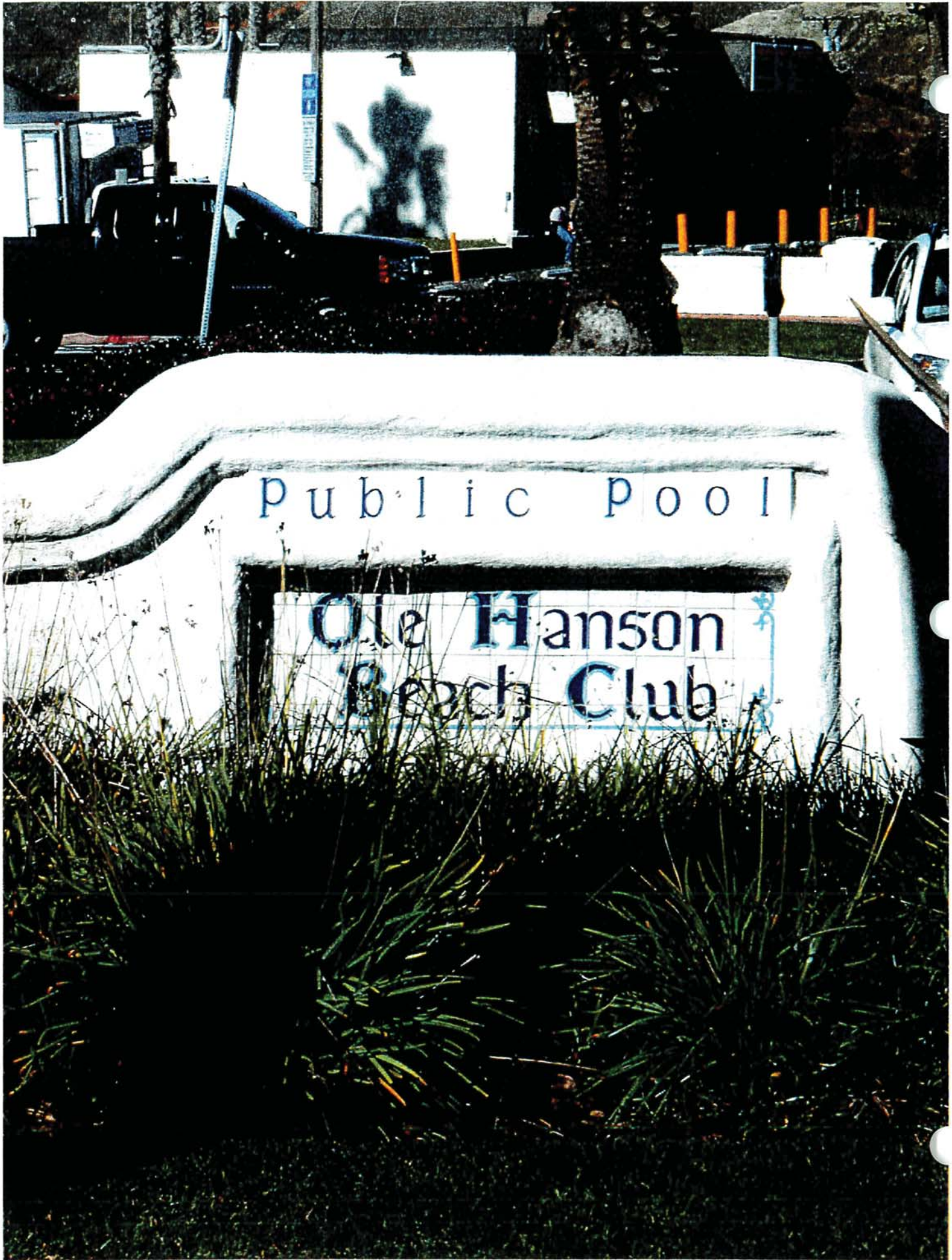
Local Reduction Measures

San Clemente will reach its emissions targets by implementing CAP reduction measures that address a diversity of issues. As indicated previously, state and federal actions will comprise the bulk of San Clemente's emissions reductions. The reduction measures are based on the analysis of the quantity and sources of greenhouse gas emissions gathered during the inventory, and seek to create emissions reductions that are realistic and achievable for our City. The City has designed these reduction strategies to meet the 2020 and 2030 targets.

Whenever possible, the CAP measures have been designed to be economically advantageous to San Clemente businesses, residents, and government. Many of the CAP measures decrease energy costs for consumers. Investing in energy efficiency and renewable energy can assist individuals, households and businesses by reducing energy demand and by providing long-term savings for operations and maintenance budgets. Similarly, the energy conservation and efficiency activities will increase energy security and independence. Measures that reduce emissions of greenhouse gasses also decrease demand for imported energy from unstable sources, and especially target carbon-intensive fuels like oil. These measures include infill development, alternative transportation, and smarter building design and construction practices. **The following Chapter 3 details the individual local measures.**

The Importance of Individual Actions

For San Clemente to reach its emission reduction goals, residents and businesses must take ownership of the Climate Action Plan and make changes to reduce emissions. While climate change is undoubtedly a global problem, total emissions are a cumulative result of individual actions.



Public Pool

Ole Hanson
Beach Club

3

Implementation

The CAP identifies a comprehensive set of targets and related measures that the City will use to reduce GHG emissions. These actions include a combination of General Plan programs, City Council policies, resolutions, and incentives, as well as outreach and education activities. As implementation occurs, each target and related measure will be continuously assessed and monitored. The City of San Clemente recognizes the need for proper staffing, financing, and resource allocation to ensure the success of each mechanism included in the CAP.

To ensure that San Clemente is on track to reach its reduction targets, the City staff will periodically evaluate the entire plan (with respect to 2020 and 2030 targets)

and evaluate the individual strategies. This section establishes a timeline for monitoring, and grants the City the ability to make amendments to the plan as needed. The Plan identifies the time frame for which each measure is to be implemented. Priority has been given to projects based on cost effectiveness, GHG reduction potential, available funding, and the ease and length of time for implementation. However, some implementation mechanisms may not be completed in the time frame indicated.

Staffing

Within the Plan, the City has identified responsible departments for each action. The City will also assign a coordinator to oversee the implementation of all actions outlined in the CAP. To increase efficiency and reduce costs, the City will integrate these actions into the context of existing workloads and programs whenever possible.

Re-Inventory

To check overall CAP progress, the City will re-inventory community-wide GHG emissions every five years for comparison against the baseline 2009 inventory. The same methodology will be used to evaluate GHG emissions in each five-year interval as was used in the baseline year. This will ensure that the future inventories are comparable to the baseline inventory. Each CAP measure prescribes the required amount of participation needed to achieve the estimated GHG reduction for that action. The City will check for rate of participation, implementation costs, and obstacles to implementation.

Alternative Transportation Measures

San Clemente's development history has created transportation infrastructure that relies almost exclusively on passenger vehicles to provide for the mobility needs of the city's residents. In San Clemente, 67 percent of all greenhouse gas emissions from the jurisdiction originate from transportation.

The preponderance of emissions from transportation in San Clemente is not surprising since the dominant mode of development throughout the Southern California region has relied on highways and passenger vehicles for mobility for nearly a century. Though daunting, the challenge of low-carbon mobility has been confronted by other cities in California and around the world and have answered it with strategies including neighborhood electric vehicles, enhanced amenities for pedestrians and cyclists, and regional mass transportation partnerships.

San Clemente citizens can have a big impact on communitywide emissions by reducing their driving. Alongside reducing individual emissions, San Clemente will experience health benefits through walking or biking to their destinations whenever feasible.

Worker trip data, based on the 2009 Census Longitudinal-Employer Household Dynamics Origin Destination Employments Statistic (LODES), was collected and analyzed to quantify and understand the work trips related to San Clemente.

The LODES data showed that there are a total of 16,194 jobs in the City of San Clemente and have the following patterns:

Work Flows:

- 12,761 employees live outside the City, but work in the City
- 3,433 employees live and work in the City
- 15,913 employees live in the City, but work outside the City

Distance to Work:

- 38 percent drive under 10 miles
- 19 percent drive between 10-24 miles
- 27 percent drive between 25 and 50 miles
- 16 percent drive over 50 miles

This data ultimately aids in the development of strategies and associated reductions.

Alternative Transportation Measure 1: Expand Pedestrian Network

Providing a pedestrian access network to access all areas of San Clemente encourages people to walk instead of drive. The mode shift results in people driving less and thus reducing VMT. Some potential strategies included in this category are the widening of any existing sidewalks, the completion of any gaps in the sidewalk network, or the extension of any existing sidewalks to provide access to desired areas of the City. This would also require eliminating physical barriers

such as walls, landscaping, and slopes that impede pedestrian circulation. It is anticipated that much of this pedestrian network expansion would occur in conjunction with development and redevelopment throughout the City.

Predicted Level of Implementation

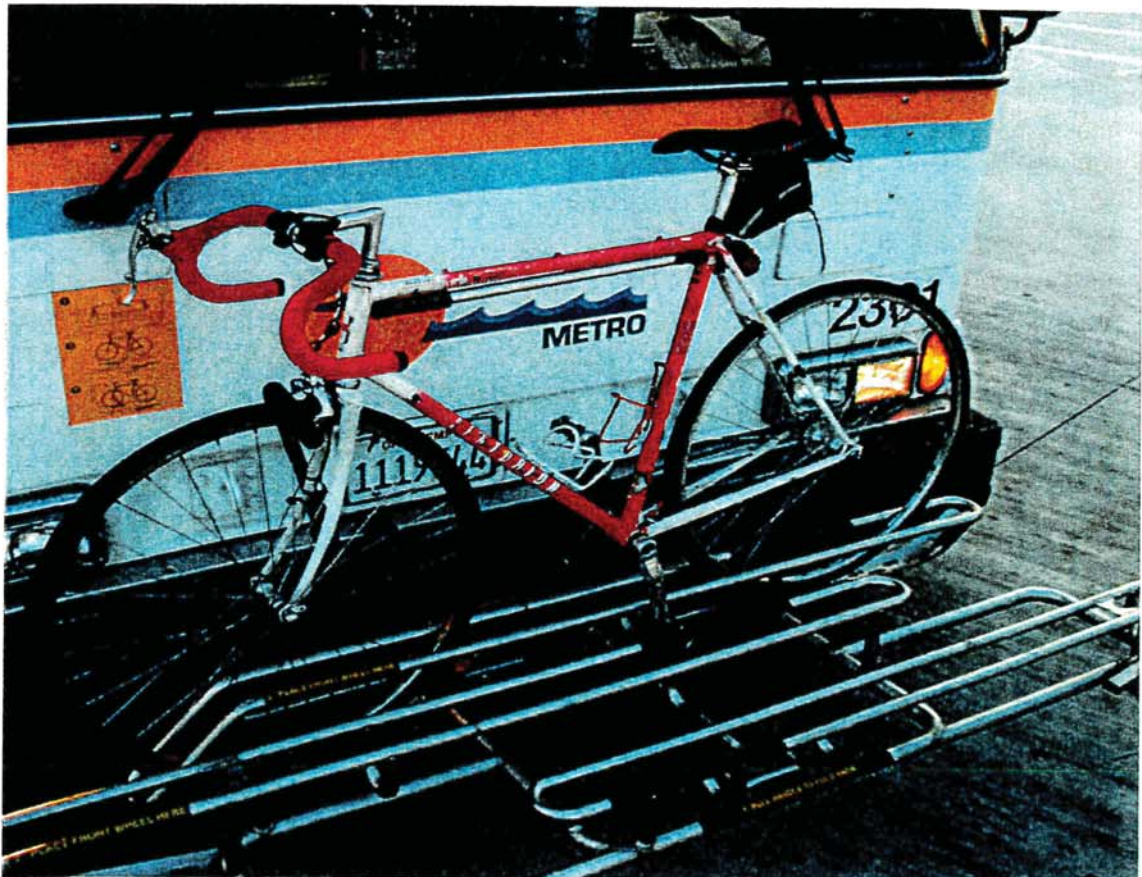
The implementation mechanism is the San Clemente Bicycle and Pedestrian Master Plan, which serves as a roadmap for developing pedestrian infrastructure and programs in the City. It encourages development of practical, safe, and enjoyable environments all while emphasizing and promoting walking as a viable transportation option.

Potential VMT Reductions

Empirical research indicates that pedestrian network improvements yield a 1-2 percent reduction in VMT, based on the scale of the proposed improvements. As these improvements are potentially limited in scale to various areas of the City, we would recommend applying the more limited VMT reduction at 1 percent.

Alternative Transportation Measure 2: Require Bicycle Parking

One way to facilitate bicycle travel is to require bicycle parking for both public and private uses. This measure identifies additional opportunities to place public use bicycle parking or to modify existing



parking requirements for bicycles with the aim of increasing the supply of parking. This measure is limited in that it applies to selected new developments within the City, which are larger than an identified threshold in terms of building size, number of employees, or other applicable criteria.

Some potential strategies included in this category are:

- **Commercial and Residential Bicycle Parking:** This measure includes requiring non-residential projects to provide permanent bicycle parking facilities to meet peak season maximum demand along with requiring residential multi-family projects to provide long-term parking facilities for all residents.
- **Transit Bicycle Parking:** This measure provides short-term and long-term bicycle parking near rail stations, transit stops, freeway access points, and park-and-ride lots. Bicycle parking provides a "first-mile" solution to commuters who may have limited access to major transportation hubs.

Predicted Level of Implementation

The implementation mechanism is the recently completed San Clemente Bicycle and Pedestrian Master Plan. The City should also work with local transit providers to implement parking at transit facilities.

Potential VMT Reductions

The effects of bicycle parking on worker trips is most applicable to those workers

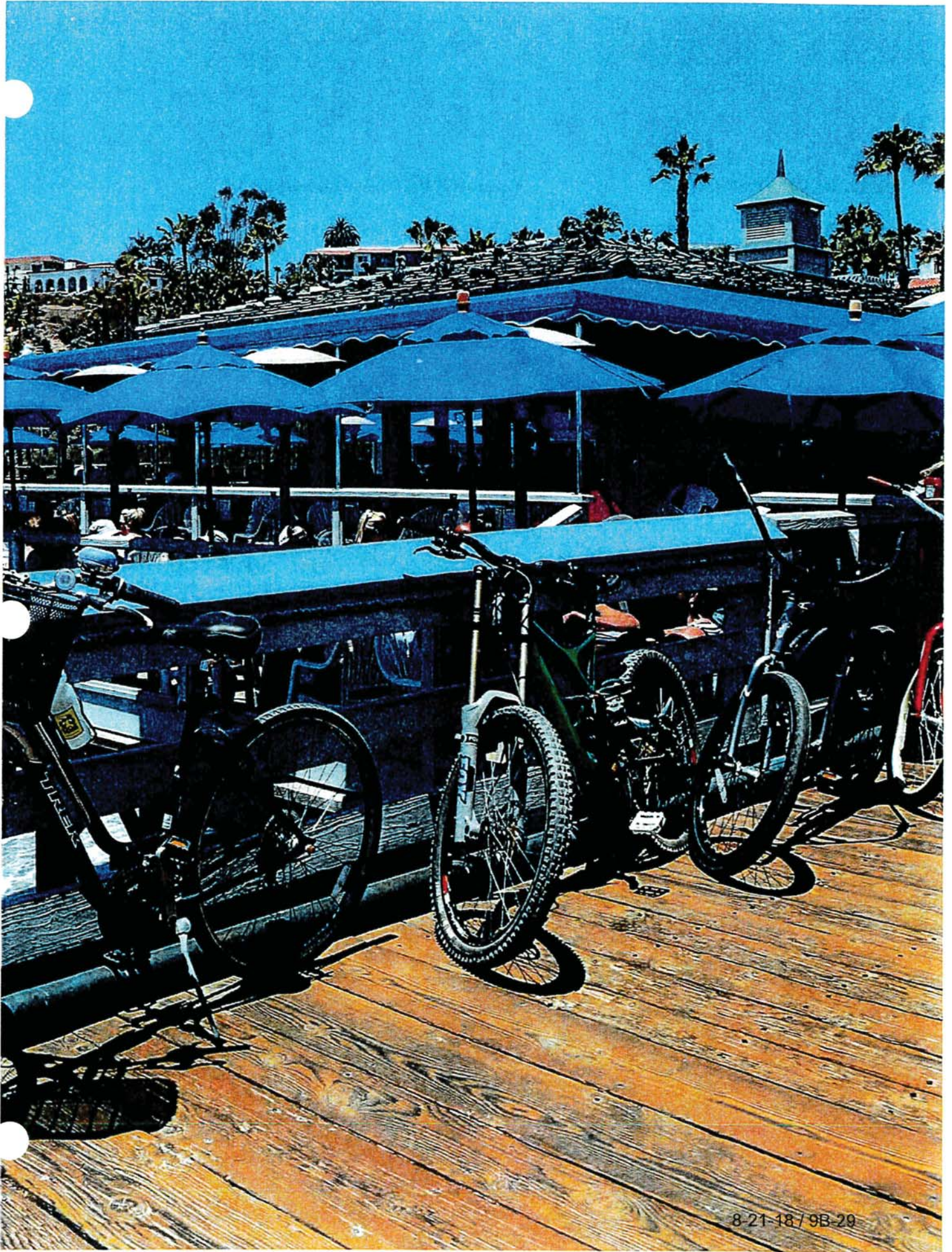
who live and work in the City of San Clemente, which comprises about 21 percent of the total worker trips coming into San Clemente. Additionally, these facilities may also be used by shorter work trips, which make up about 38 percent of all work trips. Empirical studies indicate that the maximum reduction in VMT achieved with this measure is approximately 0.5 percent. We would therefore consider that this reduction would likely be the maximum that the City could achieve, particularly given the limited scale of application that might occur by narrowing the requirements to a subset of new development.

Alternative Transportation Measure 3: Develop Off-Street Bicycle Facilities

Another means to encourage bicycle travel is to develop and implement off-street bicycle trails which can be used for both recreational travel and commuting purposes. One potential measure is requiring buildings of certain size or adjacent to bikeways to include off-street bicycle paths or lanes in their plans and construction as part of their project approval.

Predicted Level of Implementation

Similar to Measures 1 and 2, the implementation mechanism is the San Clemente Bicycle and Pedestrian Master Plan, which serves as a roadmap for developing bicycle infrastructure and programs in the City. It encourages development of practical, safe, and enjoyable environments all while emphasizing and promoting bicycling as a viable transportation option.



Potential VMT Reductions

Research has shown that adding bicycle facilities can increase the percentage of commuters who travel by bicycle. As such, we would assume that the benefits of this measure would be 1 percent of VMT as this represents the typical experience observed.

Alternative Transportation Measure 4: Incorporate Bike Lane Street Design Through the San Clemente 2013 Bicycle and Pedestrian Master Plan

The City's Bicycle and Pedestrian Master Plan incorporates bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments. These on-street bike accommodations will be created to provide a continuous network of routes, facilitated with markings and signage. These improvements can help reduce peak-hour vehicle trips by making commuting by bike easier and more convenient for more people. Improved bicycle facilities can increase access to and from transit hubs, thereby expanding the "catchment area" of these transit stop or station and increasing ridership.

Predicted Level of Implementation

The implementation mechanism is the San Clemente Bicycle and Pedestrian Master Plan, which serves as a roadmap for developing bicycle infrastructure and programs in the City. It encourages development of practical, safe, and enjoyable environments all while emphasizing and promoting bicycling as a viable transportation option.

Potential VMT Reductions

The benefits of this measure would be 1 percent of VMT as this represents the typical experience observed.

Alternative Transportation Measure 5: Encourage the Use of Electric Vehicles

San Clemente will help accelerate the transition to plug-in hybrids and electric vehicles by supporting the installation of a network of electric car charging stations.

Predicted Level of Implementation

San Clemente will support any electric vehicle charging stations by providing signs that designate parking for electric vehicles.

Land Use Measure 6: Encourage Planting of New Trees

San Clemente will encourage the planting of new trees in both residential and commercial areas, with a special emphasis in parking lots. Planting trees sequesters CO2. Therefore, increasing the citywide tree canopy will contribute to efforts to reduce GHG emissions and will have the added benefit of improving public spaces. Special note: This measure was not quantified at the time of this project (2009) as the Urban Forest Project Protocol was under development and was not a commonly accepted protocol utilized in municipal inventories. However, the City will re-visit the applicability of this Protocol during the next carbon re-inventory.

Predicted Level of Implementation

CO2 reduction varies by the number and type of trees planted.



Energy Efficiency Measures

The strategies in this section address San Clemente's second-largest source of emissions: the use of electricity and natural gas. Natural gas use accounts for 11 percent of total community emissions, while electricity use accounts for an additional 17 percent. This 28 percent of emissions represents the energy used to heat and power homes and businesses. Efficiency and reduction in this area and is critical to achieving the city's emissions reductions goals.

The residential sector in the City of San Clemente accounts for about 9 percent of electricity use and 9 percent of natural gas use. Much of this consumption is associated with existing buildings. The following measure estimates the energy and greenhouse gas reductions associated with implementing energy efficiency retrofits in single family and multi-family homes. The commercial sector accounts for 7 percent of electricity use and 2 percent of natural gas use in the City of San Clemente. Much of this is associated with existing buildings.

**Energy Efficiency Measure 1:
Adopt a voluntary Residential
and Commercial Retrofit Energy
Conservation Policy**

The calculations assume 10 percent of existing residential homes are retrofit to reduce energy use by 30 percent per unit by 2020, and 15 percent of existing residential homes are retrofit for an energy savings of 30 percent per unit by 2030. The calculations assume 10 percent of existing non-residential square footage is retrofit to reduce energy use by 30 percent per square foot by 2020, and 15 percent of existing non-residential homes are retrofit for an energy savings of 30 percent per unit by 2030. The average cost of a residential retrofit that achieves 50 percent energy savings is \$20,000. Rebate programs that reduce the initial cost and/or retrofit financing programs will be necessary to achieve the City's target participation.

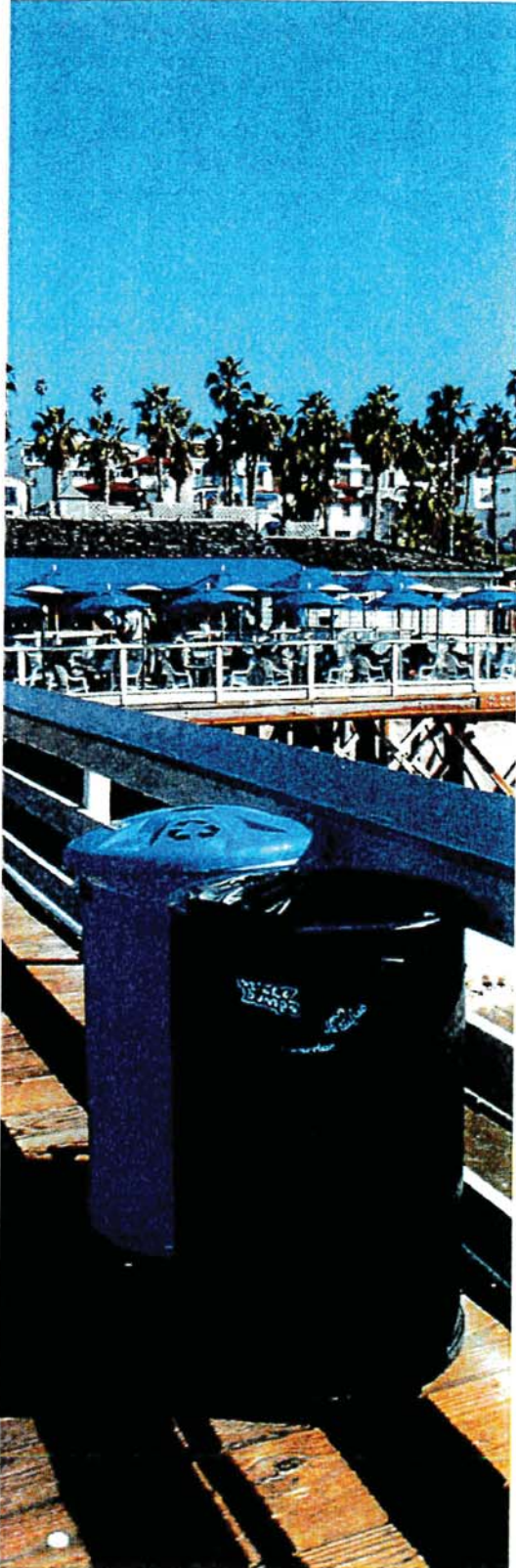
**Energy Efficiency Measure 2:
Adopt a voluntary Residential and
Commercial New Construction
Energy Conservation Policy that
would become mandatory only
if necessary participation is not
achieved by 2016**

The program would encourage energy efficiency standards above current State energy standards. Under this option the City would adopt voluntary energy efficiency standards for new construction higher than current Title-24. The program would apply to residential and commercial. It would require new construction to exceed Title-24 energy efficiency standards by 15 percent, a level comparable to GreenPoint minimum

requirements, Energy Star Rated Homes, and achieving the California Green Building Code Tier I performance criteria. The City calculations assume that 15 percent of residential projects participate through 2016 and then 100 percent of projects participate through 2020 (assuming that the anticipated level of is not achieved by 2016).

**Energy Efficiency Measure 3:
Promote the California Solar
Initiative's Solar Water Heating
Incentive Program to subsidize the
purchase of solar water heaters and
replace/ recycle old water heaters
in homes and commercial buildings**

The City estimate assumes that solar water heaters are installed in combination with both electric and natural gas water heaters. We further assume that 40 percent offset electric water heaters and 60 percent of the systems offset natural gas water heaters. This would be part of the Energy Efficiency Policy mentioned above. On January 21, 2010, the CPUC approved a Decision creating the CSI-Thermal Program, which allocates significant funding to promote solar water heating (SWH) through a program of direct financial incentives to retail customers, training for installers and building inspectors, and a statewide marketing campaign.



Waste Reduction Measure

Solid waste accounts for approximately 1 percent of the all community emissions.

Adopt a Waste Diversion Ordinance that would require waste diversion of 75 percent by 2020 and 90 percent by 2030

The City of San Clemente estimates baseline citywide waste is 50,571 tons per year with 71 percent of total waste diverted from landfill and/or recycled. The City is targeting a 75 percent diversion rate by 2020 and 90 percent diversion rate by 2030. This would be accomplished by adopting an ordinance that requires the contracted waste haulers to achieve and demonstrate the prescribed reduction rates.

On the following page, Table 3.1 provides GHG Emissions Reduction Values by Measure for 2020 and 2030. The numeric values are represented in carbon dioxide equivalents.

Table 3.1: Total GHG Emissions Reductions

	2020		2030	
	MT CO ₂ e Reduction	% of total Reduction	MT CO ₂ e Reduction	% of total Reduction
Measure 1: Alternative Transportation				
1.1 Combined Transportation Measures	4,200	5%	4,223	2%
Measure 2: Energy Efficiency				
2.1 Residential Efficiency Retrofits	3,487	3%	8,746	3%
2.2 Commercial Efficiency Retrofits	1,796	2%	4,549	2%
2.3 Residential New Construction Efficiency	2,044	2%	6,216	2%
2.4 Commercial New Construction Efficiency	1,611	1%	4,900	2%
2.5 Residential Solar Water Heaters	5,505	5%	19,342	7%
Measure 3: Waste Reduction				
3.1 Expand Waste Material Diversion	1,538	1%	2,156	1%
Total Local Reduction Strategies				
	20,181	18%	70,313	26%
State Reduction Measures				
CA Renewable Portfolio Standard	40,894	37%	40,894	15%
CA Electricity Energy Efficiency Standards	5,487	5%	16,071	6%
CA Natural Gas Efficiency Standards	1,361	1%	6,064	2%
CAFE (Pavley) & LCFS	37,903	35%	41,758	16%
Water Conservation Program	3,372	3%	3,372	1%
Total State Reduction Measures				
	89,018	82%	197,177	74%
Total GHG Emission Reductions				
	109,199	100%	267,490	100%

Legend for Implementation Tables

Measure = Description of greenhouse gas emission reduction action.

Lead Department = Responsible City party for ensuring implementation.

Implementation Mechanisms = Regulatory and/or policy mechanisms to implement the GHG reduction measure and related target.

Implementation Phase = Implementation time frame broken into three distinct phases of 2016; 2020; and 2030.

Alternative Transportation

Expand Pedestrian Network

Responsibility:

Public Works and
Community Development

Phases:

2016	2020	2030
	✗	

Implementation Actions:

The Bicycle and Pedestrian Master Plan, which contains the following policies that identify gaps in the network and prioritize construction activities:

- The City will prepare and maintain an inventory of sidewalk facilities to determine where pedestrian improvements are most needed to insure a continuous safe route for pedestrians throughout San Clemente.
- The City will continue to identify and repair sidewalks and public areas that have pedestrian hazards.
- The City will work towards closing existing gaps in San Clemente's pedestrian network.
- The City will identify weak links and discontinuities in the existing network and develop a plan to prioritize and fund solutions that improve or complete links.

Alternative Transportation

Require Bicycling Parking

Responsibility:

Community Development

Phases:

2016	2020	2030
✘		

Implementation Actions:

One way to facilitate bicycle travel is to require bicycle parking for both public and private uses. This strategy would identify additional opportunities to place public use bicycle parking or to modify parking requirements for bicycle with the aim of increasing the supply of parking.

This strategy applies to selected new developments within the City which are larger than an identified threshold in terms of building size, number of employees, or other applicable criteria.

Alternative Transportation

Develop Off-Street Bicycle Facilities

Responsibility:

Public Works and
Community Development

Phases:

2016	2020	2030
	✘	

Implementation Actions:

Another means to encourage bicycle travel is to develop and implement off-street bicycle trails which can be used for both recreational travel and commuting purposes.

Some potential strategies that would be included in this category would include requiring buildings of certain size or adjacent to bikeways to include off-street bicycle paths or lanes in their plans and to construct them as part of their project approval.

Alternative Transportation

Incorporate Bike Lane Street Design

Responsibility:

Public Works and
Community Development

Phases:

2016	2020	2030
		<input checked="" type="checkbox"/>

Implementation Actions:

The City's Bicycle and Pedestrian Master Plan incorporates bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments. These on-street bike accommodations will be created to provide a continuous network of routes, facilitated with markings and signage.

The Bicycle and Pedestrian Master Plan, which will identify gaps in the network and prioritize bike lane siting and striping.

Alternative Transportation

Encourage the Use of Electric Vehicles

Responsibility:

Community Development
and Public Works

Phases:

2016	2020	2030
<input checked="" type="checkbox"/>		

Implementation Actions:

Consider designation and establishment of EV charging stations in applicable City projects. Consider development requirements for designation of preferential parking spaces and related plug-in chargers in public parking lots to support electric vehicle (EV) use and EV charging opportunities.

Land Use

Encourage Planting of New Trees

Responsibility:

Community Development
and Public Works

Phases:

2016	2020	2030
	✘	

Implementation Actions:

Consider opportunities to plant trees in residential and commercial areas, with an emphasis on parking lots.

Energy Efficiency

Residential and Commercial Retrofit Energy Conservation Policy

Responsibility:

Planning and Building
Department

Phases:

2016	2020	2030
	✘	✘

Implementation Actions:

Develop a Residential and Commercial Retrofit Energy Efficiency and Conservation Policy that is voluntary.

Energy Efficiency

Residential and Commercial New Construction Energy Conservation Policy

Responsibility:

Planning and Building
Departments

Phases:

2016	2020	2030
<input checked="" type="checkbox"/>		

Implementation Actions:

Develop a Residential and Commercial New Construction Energy Efficiency and Conservation Policy that is voluntary. If participation rates are not met, investigate converting to a mandatory ordinance.

Energy Efficiency

Promote the California Solar Initiative's Solar Water Heating Incentive Program

Responsibility:

Planning and Building
Departments

Phases:

2016	2020	2030
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Implementation Actions:

Develop a Residential and Commercial Retrofit Energy Efficiency and Conservation Policy that is voluntary.

Waste Reduction

Waste Diversion Ordinance

Responsibility:

Public Works and
Community Development

Phases:

2016	2020	2030
	✗	✗

Implementation Actions:

Adopt a Waste Diversion Ordinance that would require waste diversion of 75 percent by 2020 and 90 percent by 2030.



4

Conclusion

This Climate Action Plan represents the City of San Clemente's commitment to fighting global climate change by reducing greenhouse gas emissions from both municipal operations and community activities. Though climate change presents a daunting challenge for people and businesses, San Clemente's actions to combat climate change represent local action that is a powerful tool in meeting this challenge.

In addition to the global benefits of climate action, the citizens of San Clemente will benefit from the public health protection and sustainable economic development afforded by the strategies adopted in the CAP. These strategies create public health benefits by reducing pollution of resources like air and water, which are two basic necessities for life with direct impacts on human health, and by reducing potential disruptions to the climate system that protect people from extreme weather events.

Finally, although the government of San Clemente is taking action against climate change, community action is critical to achieving emissions reductions goals that support physical well-being and economic vitality. By building on the framework set out in this Climate Action Plan, the citizens of San Clemente have the tools to build a community that not only creates a sustainable, healthy environment for itself, but which also allows other communities around the world to enjoy the same rights.



8-21-1879B-42

5

Glossary of Terms and Acronyms

Baseline: The baseline serves as a reference point to assess changes in greenhouse gas emission from year to year. According to the California Air Resources Board (CARB), in general, Baseline Actual Emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. For purposes of creating the baseline emissions, local governments estimate emissions from government operations and community-level.

Business-As-Usual (BAU): A scenario used for the projection of greenhouse gas emissions at a future date based on current technologies and regulatory requirements in absence of other reductions.

Carbon Dioxide (CO₂): This is the reference gas against which other greenhouse gases are measured and therefore has a Global Warming Potential of 1. It is naturally occurring and is also a primary by-product from combustion of fossil fuels and other industrial and agricultural processes.

Carbon Dioxide Equivalent (CO₂e):

This is a common unit for normalizing greenhouse gases with different levels of heat trapping potential. For carbon dioxide itself, emissions in tons of CO₂ and tons of CO₂e are the same, whereas for nitrous oxide and methane, stronger greenhouse gases, one ton of emissions is equal to 310 tons and 21 tons of CO₂e respectively.

The California Environmental Quality Act (CEQA):

This was a California statute passed in 1970, shortly after the United States federal government passed the National Environmental Policy Act (NEPA), to institute a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and adopt all feasible measures to mitigate those impacts.

Climate: This is typically defined as the "average weather," or more rigorously, as the statistical description in terms of the average and variability of weather over a period of time ranging from months to thousands of years. These variables are most often temperature, precipitation, and wind. Climate can also refer to the global climate system.

Climate Change: Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change results from: 1) natural factors, such as changes in the sun's

intensity or slow changes in the Earth's orbit around the sun; 2) natural processes within the climate system (e.g. changes in ocean circulation); and 3) human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.).

Corporate Average Fuel Economy (CAFE): The CAFE standards were originally established by Congress for new automobiles, and later for light trucks, in Title V of the Motor Vehicle Information and Cost Savings Act. Under CAFE, automobile manufacturers are required by law to produce vehicles with composite sales-weighted fuel efficiency, which cannot be lower than the CAFE standards in a given year. Standardized tests are used to rate the fuel economy of new vehicles.

Energy Efficiency: This relates to a change in behavior in that the same function can be accomplished with less electricity. This usually requires newer equipment (such as televisions), different types of lighting (such as CFL bulbs) and other technology changes.

Energy Conservation: This is a typical practice using what you have more efficiently, such as shutting off the light or only using the dishwasher when it is full.

Emissions: The release of a substance (usually a gas when referring to the subject of climate change) into the atmosphere.

Forecast Year: Any future year in which predictions are made about emissions levels based on growth multipliers applied to the base year.

Global Warming: Global warming is an average increase in the temperature of the atmosphere near the Earth's surface and in the troposphere, which can contribute to changes in global climate patterns. Global warming can occur from a variety of causes, both natural and human induced. In common usage, "global warming" often refers to the warming that can occur as a result of increased emissions of greenhouse gases.

Greenhouse Gas: Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, but are not limited to, water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (NO₂), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), ozone (O₃), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).

Intergovernmental Panel on Climate Change (IPCC): The IPCC was established jointly by the United Nations Environment Program and the World Meteorological Organization in 1988. The purpose of the IPCC is to assess information in the scientific and technical literature related to all significant components of the issue of climate change. The IPCC draws upon hundreds of the world's expert scientists as authors and thousands as expert reviewers. Leading experts on climate change and environmental, social,

and economic sciences from some 60 nations have helped the IPCC to prepare periodic assessments of the scientific underpinnings for understanding global climate change and its consequences. With its capacity for reporting on climate change, its consequences, and the viability of adaptation and mitigation measures, the IPCC is also looked to as the official advisory body to the world's governments on the state of the science of the climate change issue. For example, the IPCC organized the development of internationally accepted methods for conducting national greenhouse gas emission inventories.

Measures: Any action taken to reduce GHG emissions.

Mitigation: This is putting in place enforceable plans, policies, and programs to reduce GHG emissions now in order to slow the rate of increase in the atmosphere. Successful mitigation at local, national and international levels will reduce the impacts of a changing climate for future generations. This is the legacy we leave.

Metric Ton (MT): Common international measurement for the quantity of greenhouse gas emissions. A metric ton is equal to 2205 lbs. or 1.1 short tons.

Sector: A term used to describe emission inventory source categories for greenhouse gases based on broad economic sectors.

Target Year: The year by which the emissions reduction target should be achieved.

Vehicles Miles Traveled (VMT): This unit measures the aggregate mileage traveled by all vehicles in a specific location. VMT is a key measure of street and highway use. Reducing VMT is often a major objective in efforts to reduce vehicular congestion and achieve air quality goals. The transportation sector is the top GHG emitter in California, contributing roughly 40% of all California emissions. Poor fuel efficiency and high vehicle miles traveled (VMT) are primary contributors to transportation sector GHG emissions. Meeting California's GHG emissions reduction goals requires reductions in both per-mile emissions (often measured in as a vehicle's miles per gallon performance) and vehicle miles traveled. Fuel efficiency has been addressed historically by the federal Corporate Average Fuel Economy (CAFE) standards, and California has passed its own legislation regulating GHG emissions from vehicles. The number of miles traveled has ramifications on insurance premiums, but there has not been and likely will not be any legislative action to curb VMT even though it is growing at a much faster rate than population or the economy.

Acronyms

AB - Assembly Bill
APCD – Air Pollution Control District
CACP - Clean Air and Climate Protection Software
CAP - Climate Action Plan
CAPP - Climate and Air Pollution Planning Assistant
CARB - California Air Resources Board
CEC - California Energy Commission
CEQA - California Environmental Quality Act
CH₄ - Methane
CO₂ - Carbon dioxide
CO₂e - Carbon dioxide equivalent
EPA - U.S. Environmental Protection Agency
GHG - Greenhouse gas
HFC - Hydrofluorocarbons
HVAC - Heating, ventilating, and air conditioning
IPCC - Intergovernmental Panel on Climate Change
KWh - Kilowatt-hours
LCFS - Low Carbon Fuel Standard
MMT - Million metric tons
MW - Megawatt
NO₂ - Nitrous oxide
PPM - Parts per million
SB - Senate Bill
TOD - Transit oriented development
USGBC - U.S. Green Building Council
VMT - Vehicle miles traveled