



Interim Mayor Todd Gloria

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CITY OF SAN DIEGO CLIMATE ACTION PLAN

WORKING DRAFT December 2013

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Dear Friends,

I am proud to serve as Interim Mayor of the City of San Diego. My tenure here is limited so I have worked overtime to ensure that this cutting-edge Climate Action Plan is crafted properly and will strengthen the economic and community heartbeat of San Diego. In developing the Climate Action Plan, we engaged technical experts, local sustainability groups, and businesses and industry associations to provide the City with resourceful ideas and recommendations. Thank you to the Environmental and Economic Sustainability Task Force, City staff, and the hundreds of residents and industries representatives who provided comments for the hard work and long hours that went into developing this progressive Climate Action Plan.

A sustainable and vibrant San Diego is a city that generates excellent-paying jobs in up-and-coming green industries that increases our global competitiveness, spends less on energy and other constrained resources with each passing year, and ensures every resident and business has the opportunity to thrive in the "City of Villages." As a result, this Plan offers tangible strategies, metric indicators for monitoring, and implementation mechanisms aimed at advancing San Diego's goal of becoming the most sustainable city in the country.

The time to act is now! The Climate Action Plan cannot be an idea that simply sits on a shelf. The City is committed to getting to immediate implementation on the FIVE BOLD strategies in this Plan and to lead the way for other cities. These strategies are:

- 1. ENERGY & WATER EFFICIENT BUILDINGS**
- 2. CLEAN & RENEWABLE ENERGY**
- 3. MULTIMODAL TRANSPORTATION OPTIONS**
- 4. ZERO WASTE MANAGEMENT**
- 5. URBAN FOREST & LOCAL FOOD PRODUCTION**

I hope that San Diego's residents and businesses will join us in taking action to ensure San Diego remains a great city for future generations. **San Diego is still America's Finest City.** You can learn more and share your thoughts with us online at www.SDClimateMAP.org.

Sincerely,

Todd Gloria

Interim Mayor, City of San Diego

San Diego will take the lead in California for tackling climate change.

The City of San Diego (City) Climate Action Plan (CAP) identifies measures to effectively meet greenhouse gas (GHG) **reduction targets for 2020 and 2035**. Attainment of the reduction targets requires commitment to local and regional actions as well as continued implementation of federal and state mandates.

These actions and associated co-benefits will contribute to the City's current and future prosperity and quality of life by:

- Fostering high-quality, well-paying jobs for the middle class. These green jobs also represent an opportunity for workers to organize into unions in high-growth industries, allowing labor and businesses to work together to maintain and expand the number of regional jobs.
- Furthering San Diego's leadership in clean technology industries, such as recycling, renewable energy, information technology, electric motors, lighting, and greywater.
- Continuing the "City of Villages" concept of walkable and pedestrian-friendly neighborhoods with a mixture of uses that revitalize existing neighborhoods while retaining their individual character.

- Transport systems that prioritize active transport and rapid transit systems, along with better urban land use, also can help improve access for vulnerable groups, including children, the elderly, people with disabilities, and lower wage earners, enhancing health equity.

The City of San Diego Climate Action Plan puts forward FIVE BOLD Strategies:

- 1. ENERGY & WATER EFFICIENT BUILDINGS**
- 2. CLEAN & RENEWABLE ENERGY**
- 3. MULTIMODAL TRANSPORTATION OPTIONS**
- 4. ZERO WASTE MANAGEMENT**
- 5. URBAN FOREST & LOCAL FOOD PRODUCTION**

These doable strategies will leverage the City's efforts as well as provide clear direction for meeting this challenge.

As the CAP will demonstrate, implementation of these strategies will require creativity, visionary leadership, and collaboration to achieve a lasting impact.

Implementing the 2014 CAP demonstrates to investors, businesses and residents that San Diego is acknowledging the impacts of a changing climate and is committed to keeping this in the forefront of decision-making. Successful implementation will allow the City to contribute its fair share toward achieving California's reduction targets of 2020 and 2050. As new technologies

and options emerge, actions may change. Therefore, the City will remain vigilant, yet flexible, in its determination to reduce emissions and prepare for a changing climate.

The CAP contains five chapters: Background, Social Equity and Job Creation, Reducing Emissions, Implementation and Monitoring, and Adaptation. Appendices A through D provide additional detail on topics covered within the CAP. A brief summary of each chapter follows:

Chapter 1 - Background: Provides an introduction and purpose for the creation of the CAP, and also summarizes the socio-economic considerations for taking action to reduce GHG emissions. Specifically, the CAP serves as mitigation for the City's adopted 2008 General Plan. The General Plan requires the establishment of comprehensive policies to reduce the GHG emissions of future development, the existing community-at-large, and City operations as partial mitigation for the impacts of the General Plan.

Chapter 2 - Social Equity and Job Creation: Describes how the impacts of climate change will disproportionately effect disadvantaged communities and how the City can proactively identify them prior to project implementation. This chapter also illustrates how climate plan policies can lead to the creation of living wage, "green jobs" and actions the City of San Diego is taking to promote economic growth.

Chapter 3 - Reducing Emissions: Delivers a baseline inventory for 2010; emission forecasts for 2020 and 2035; establishes reduction targets for 2020 and 2035; and identifies federal, state and local measures to reduce GHG emissions that are in compliance with state mandates.

Chapter 4 - Implementation and Monitoring: Details the implementation and phasing mechanisms for individual targets. For each target, the CAP identifies the strategy, target, specific implementation actions and parties responsible for implementation, progress indicators and metrics, and estimated GHG reductions for 2020 and 2035. This chapter also illustrates the contents of the Annual Monitoring Report, including the results of the annual GHG inventory. The Monitoring Report will be a public document and presented to the Mayor and City Council each year.

Chapter 5 - Adaptation: Identifies climate impacts for San Diego, illustrates current climate adaptation efforts throughout the state, and provides a guide to adaptation strategy development. This chapter then gives recommendations for adaptation strategies by sector, illustrates next steps, and discusses the economic considerations for strategy selection and implementation.

BACKGROUND



Balboa Park - Museum of Man

San Diego will set the new standard for climate planning in California.

Climate change is often discussed in global terms, yet the impacts are experienced locally. These impacts - higher seasonal temperatures, exacerbation of poor air quality, diminished water supplies and impaired water quality, disruption of agricultural cycles - have great consequences not only for the built and natural environment, but also for the community's health and economic vitality. Because cities directly and indirectly influence the emissions of greenhouse gases (GHGs), the major cause of climate change, they are uniquely positioned to provide solutions.

The City of San Diego's (City) Climate Action Plan (CAP) will support California's transition from business-as-usual growth and development practices to a clean, low-carbon economy. California's landmark global climate change legislation, AB 32, established the state's goal of substantially reducing its GHG emissions. Subsequent legislation, namely Senate Bill (SB) 97 and SB 375, underscores the state's commitment by requiring an analysis of GHGs under CEQA and by linking GHG emissions to land use, transportation, and housing policies, respectively. Collectively, these statutes and forthcoming regulations demand that cities address climate change in their policies, programs, and operations.

The Governor's Executive Order S-3-05 sets the 2050 statewide GHG reduction target of 80 percent below 1990 levels. The 2035 target in the CAP is based on the reduction trajectory for meeting the 2050 target. As currently projected, the City will meet both the 2020 and 2035 targets. There are a number of scenarios that will lead to this success. They include new and more cost-effective technologies, additional state and federal requirements, and changes in local policies and ordinances.

By the Numbers:

Based on the 2010 community-wide baseline inventory, the City of San Diego emits approximately 13.1 million metric tons of GHG emissions annually. To meet the state's 2020 and 2035 targets for climate change, the City will need to reduce its GHG emissions by 15 percent and 49 percent. Stated simply, the city's target is to reduce emissions to approximately 11.1 million metric tons by 2020 and down to approximately 7.6 million metric tons by 2035.

Based on the 2010 California Air Resources Board's (ARB) Scoping Plan, the City of San Diego's CAP is a proactive step toward addressing these demands. The CAP includes a quantitative inventory of GHG emissions (baseline), a projection of emissions for 2020 and 2035 (business-as-usual scenario), and a target to reduce GHGs by 2020 and 2035. The CAP identifies strategies for achieving this target, with an emphasis on improving

transportation modes and systems, incorporating energy efficiency standards, and increasing the City’s renewable energy supply portfolio.

The City of San Diego places great importance on proactive planning to reduce or eliminate the long-term risk to people and property within the community from a changing climate. However, the City also recognizes that the impacts of climate change will be localized and will vary based on the community’s physical, socio-economic (demographic), and economic characteristics. As such, our communities are best positioned to assess and address the implications of climate change.

For this reason, the CAP is one of several implementation vehicles for the adopted 2008 General Plan. The General Plan’s “City of Villages” vision promised to inspire older neighborhoods to revitalize their community main streets, welcome more residential density closer to mass transportation, and unite residents and business owners within the smaller communities in San Diego as catalysts for smart growth. The CAP will

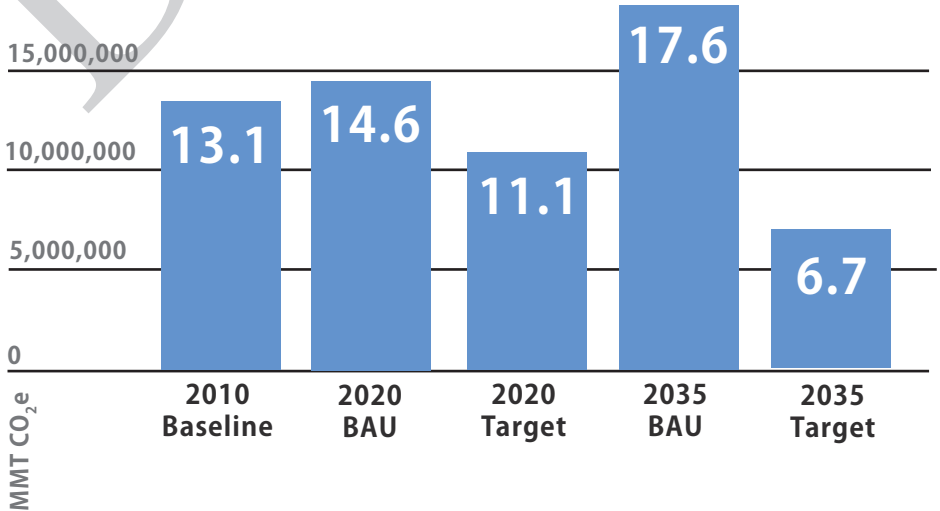
take this vision a step further through incremental changes to the urban land use form, providing greater multi-model choices, and transforming how we source and use energy. Further, the CAP will compliment the General Plan in the form of mitigation with quantifiable data and benchmarks for success.

It is likely that some degree of climate change will occur regardless of the City’s effort to reduce and mitigate GHG emissions. As a result, the City will need to adapt to these changes within the context of the community’s environmental and socioeconomic system. The City of San Diego intends to develop a stand-alone Climate Adaptation Plan that will integrate, and build upon, the strategies and measures in the CAP. More information regarding climate adaptation can be found in **Chapter 6**.

Figure 1.1 shows the City’s 2010 Baseline Inventory; the 2020 and 2035 Business-as-Usual (BAU) forecast; and the related GHG emission reduction targets to reduce the City’s GHG emissions.

Figure 1.1

Baseline, BAU, and Target GHG Emissions



What are the benefits of a Climate Action Plan for San Diego?

Improving public health and air quality

The US Environmental Protection Agency (EPA) found that GHGs constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to the climate change problem (EPA 2013). The prevalence of asthma is strong indicator of the severity of unhealthy conditions in San Diego communities. For example, 72 percent of City Heights' children ER visits are due to asthma-related conditions (Public Health Institute 2013). Children living within the Barrio Logan area reported 10.5 percent physician-diagnosed asthma compared to the national average of 7.7 percent, a 36 percent increase (EHC 1997). Therefore, minimizing GHG emissions will help improve air quality for these specific populations by reducing other harmful air pollutants, such as carbon monoxide, sulfur dioxide, and particulate matter.

Providing energy security and independence

Smarter building design and construction practices, including passive solar heating and cooling, building orientation, and installing renewable energy systems, will reduce the demand for energy. Additionally, generating clean energy resources locally for our community will keep dollars here in San Diego. When transmission costs are taken

into account, the net cost variations are quite modest. And when we factor in the overall social, environmental and economic benefits from local energy generation, self-reliance is almost always more affordable than import-dependence (Institute for Local Self-Reliance 2009).

Spurring economic development and increasing global competitiveness

Reinvestment in local buildings and infrastructure will provide new opportunities for skilled trades and a variety of professional services as well as increasing San Diego's global competitiveness in the world economy. The methods and tools include public/private partnerships, connecting with labor market intermediaries for training, maintaining a deep commitment to ensuring that persons of color and those from disadvantaged communities get an opportunity to get green jobs, thereby tapping into a growth sector and a potential foothold into the middle class. These jobs represent an opportunity for labor and businesses to work together to build a green economy (Middle Class Task Force, Office of the Vice President of the United States 2009).

The Climate Action Plan establishes the following:

- **Identification of targets, strategies, and implementation measures to reduce GHG emissions consistent with AB32 and CEQA Guideline § 15183.5**
- **Compliance with the adopted 2008 City of San Diego General Plan**
- **An Implementation Plan and Annual Monitoring**

Purpose

This chapter establishes the relationship of the CAP to the City of San Diego 2008 General Plan (General Plan) and provisions of the California Environmental Quality Act (CEQA) statute and guidelines. The City's first Climate Protection Action Plan (CPAP) was approved in 2005 and focused on the City's mission to reduce emissions from municipal operations. The CPAP was central to fostering heightened awareness and developing "climate change literacy" within the City and the community.

Connecting the City of San Diego 2008 General Plan with the Climate Action Plan

The General Plan is the framework for the City's commitment to long-term conservation, sustainable growth, and resource management. It addresses GHG emission reductions through its City of Villages growth strategy and a wide range of inter-disciplinary policies. The City of San Diego's General Plan Program Environmental Impact Report (PEIR) Mitigation Monitoring and Reporting Program (MMRP) specifically discusses the mitigation of climate change (p 49-50). The MMRP references the General Plan Action Plan (Action Plan), which was adopted in 2009; one year after the General Plan was adopted. A progress assessment of the Action Plan is performed and reported annually.

The CAP's support of City's actions to reduce GHG emissions is consistent with the 2008 General Plan. The General Plan's Conservation Element policies make specific mention of actions necessary to address the effects of climate change.

These policies are:

- Policy CE-A.2 to "reduce the City's carbon footprint" and to "develop and adopt new or amended regulations, programs and incentives as appropriate to implement the goals and policies set forth" related to climate change.
- Policy CE-A.13 to "regularly monitor, update, and implement the City's Climate Protection Action Plan, to ensure, at a minimum, compliance with all applicable federal, state, and local laws."

Connecting California Environmental Quality Act with the Climate Action Plan

The CAP is consistent with CEQA Guideline § 15183.5, whereby a lead agency (e.g. the City of San Diego) may analyze and mitigate the significant effects of greenhouse gas emissions at a programmatic level, such as in a general plan, a long range development plan, or a separate plan to reduce greenhouse gas emissions. A plan for the reduction of greenhouse gas emissions should:

- Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- 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;
- Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- 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;

- 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
- Be adopted in a public process following environmental review.

Later, as individual projects are proposed, project-specific environmental documents may tier from and/or incorporate by reference the CAP's programmatic review of GHG impacts in their cumulative impacts analysis.

A project-specific environmental document that relies on this CAP for its cumulative impacts analysis must identify specific CAP measures applicable to the project, and how the project incorporates the measures. If the measures are not otherwise binding and enforceable, they must be incorporated, as mitigation measures applicable to the project. If substantial evidence indicates that the GHG emissions of a proposed project may be cumulatively considerable, notwithstanding the project's compliance with specific measures in this CAP, an EIR must be prepared for the project.



Regional Influences on the Climate Action Plan

San Diego Association of Governments (SANDAG): SANDAG was the first Metropolitan Planning Organization (MPO) in the California to produce a Sustainable Communities Strategy (SCS) as required by SB 375. Passed in 2008, SB 375 requires each MPO in California to prepare a SCS as a part of its Regional Transportation Plan (RTP). The SCS must demonstrate how regional GHG reduction targets (related to vehicle miles travelled [VMT] from cars and light trucks) would be met through land use patterns, transportation infrastructure investments, and other measures.

According to SANDAG, the GHG targets for the San Diego region call for a 7 percent per capita reduction by 2020 and a 13 percent per capita reduction by 2035. As part of the action taken to approve the 2050 RTP and its SCS, the following early actions:

- Evaluate alternative land use scenarios as part of the Regional Comprehensive Plan (RCP) update to attempt to address the so-called “backsliding” of GHG levels between 2035-2050;
- Develop an early action program for projects included in the Regional Bicycle Plan;
- Plan for the broader Active Transportation program, including Safe Routes to School and Safe Routes to Transit. The Safe Routes to School Capacity Building and Planning Grant Program has awarded six grants of approximately \$50,000 each, for a total of \$279,283, to support comprehensive safe routes to school planning;
- Implement an action to develop a regional transit-oriented development policy in the 2050 RTP SCS to promote and incentivize sustainable development;
- Continue to make enhancements to the travel demand models; the activity-based models currently under development will be “open source” and available for the next RTP update; and
- Develop a regional complete streets policy. SANDAG is currently in Phase II, where the goal is to refine the draft framework, including goals, policies, and performance measures (SANDAG 2011).

San Diego Unified Port District: The changing climate will affect San Diego Bay’s waterfront property, recreation opportunities, and wildlife habitat. As an environmental steward of San Diego Bay, the Port of San Diego (Port) is developing a Climate Mitigation and Adaptation Plan to prepare for these impacts. This will be a critical tool for future planning and development of Port tidelands and will focus on a variety of strategies pertaining to sea level rise, water reuse and conservation, beach erosion, and energy demand (Port of San Diego 2013).

San Diego County Water Authority (SDCWA): The City receives approximately 85 percent to 90 percent of its water from SDCWA, which obtains water principally from the Metropolitan Water District of Southern California and transferred water from the Imperial Irrigation District. The SDCWA Urban Water Management Plan serves as a long-range planning document for the City’s water supply in accordance with the Urban Water Management Act. The SDCWA has completed a GHG inventory, is in the process of developing a CAP, and is partnering with Scripps Institution of Oceanography to integrate impacts of climate change into its long range planning (SDCWA 2010).

SOCIAL EQUITY AND JOB CREATION

Social Equity

Vulnerabilities

The impacts of climate change will not affect everyone equally. For example, people working outdoors (e.g., construction) are more exposed to high temperatures and heat waves than indoor workers. However, unique segments of the population are more vulnerable to climate variability and disasters based on their specific socio-economic and social conditions. The Office of Environmental Health Hazard Assessment (OEHHA 2010) reported that the impacts of climate change are expected to “disproportionately affect those who are socially and economically disadvantaged, including the urban poor, the elderly, children, traditional societies, agricultural workers and rural populations.” For example, the elderly and infants tend to be physically more affected by extreme heat and extended heat periods (especially at night). Low-income families are more likely to live in houses lacking air conditioning, thereby less able to avoid excessive heat exposure.

And, while, SANDAG’s 2030 RTP acknowledges that the San Diego region now is an ethnically and racially diverse region, many of the non-white communities are also low income. As illustrated by **Table 2.1**, the relationship between environmental hazards and socioeconomic conditions is real.

Table 2.1 Toxic Substances in San Diego Communities

Area	People of Color	Families in Poverty	Toxic Substances in Community
Barrio Logan	97%	35%	128 Million Lbs
La Jolla	14%	3%	3.2 Million Lbs

Source: American Community Survey, 2005 - 2009
Estimates, Environmental Health Coalition 2011

The City believes the impacts from climate change on disadvantaged communities will parallel those of other environmental hazards. Specifically, that there can be an unequal distribution of impacts from climate change and they may be substantial when disadvantaged communities lack the economic and social resources necessary to respond. Therefore, the City’s goal is to promote Social Equity whereby the benefits of the CAP will be shared equally, fairly, and with lack of prejudice among all the persons within the community. Ensuring social equity does not necessarily guarantee equality – but it does mean providing all residents with access to quality jobs and adequate infrastructure (SANDAG 2011).

A benefit of the CAP’s measures is that they will generally affect all San Diego residents, regardless of socioeconomic status. However, to address the potential for disproportionate impact of climate change on disadvantaged populations, the City has identified impacted communities and will prioritize programs and actions to reduce emissions (e.g., install renewable energy, upgrade existing buildings, build/improve public transit and walkability/bikability, and increase urban green space) in these areas.

The identification, and therefore prioritization of CAP programs and actions for disadvantaged populations will be based on the socioeconomic characteristics of a community including the percentages of minority and low-income households. The CAP draws from SANDAG's 2011 RTP for identification of disadvantaged communities, uniquely labeled as "Low Income and Minority" (LIM) Communities of Concern (SANDAG 2011). Using the RTP, City staff will prioritize the implementation of CAP measures for City of San Diego communities that are LIM Communities of Concern. In addition to LIM Communities of Concern, the CAP will draw upon the OEHHA CalEnviroScreen's screening methodology to help identify San Diego communities that are disproportionately burdened by multiple sources of pollution.



Job Creation

There are considerable economic benefits of implementing CAP measures in the San Diego community. CAP measures intended to reduce resource consumption (e.g., energy efficiency measures) will save money for individuals, families, and businesses. In addition, CAP measures will promote job creation through capital improvements and corresponding research, development, and innovation. These jobs are in primarily high-growth "green job" or "clean tech" with corresponding high livable wages.

The Bureau of Labor Statistics describes "green jobs" as either:

1. Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources, or
2. Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources (BLS 2013).

A recent study published by the Natural Resources Defense Council projected that stricter emissions standards could net 210,000 national jobs by 2020 (Stanton et al. 2013). California is the poised to capture a large share of these new jobs. As illustrated by **Table 2.2**, California is the national leader in clean tech job creation. In the second quarter of 2013, the state led the way nationally in green project and job announcements with twelve new wind, solar, biofuels, and transportation projects that could cumulatively create more than 9,000 jobs (E2 2013). E2 reported that California’s renewable energy standards will ensure more green jobs will be created in the future, as one-third of all power used in the state will have to come from renewable sources by 2020.

The San Diego Workforce Partnership’s “Green Jobs Outlook for San Diego” revealed there were almost 340,000 green jobs in San Diego as of 2011. They also forecast a 3 percent annual increase through 2012 (SDWP 2011) . These numbers are consistent with San Diego’s transformation into a hub of green technology innovation where approximately 840 cluster companies were located in 2013 (CleanTech SD 2013). Over 20 percent of these companies are solar power focused. These firms offer a range of job opportunities ranging from installation, project management, finance, and research. Clearly, climate action planning and implementation have, and will continue to, lead to the creation of “green jobs.

Table 2.2 - Clean Tech Job Activity - Top 15 U.S. Metro Areas

1. San Francisco, CA
2. Los Angeles, CA
3. Boston, MA
4. New York, NY
5. Denver, CA
6. Washington D.C.
7. San Diego, CA
8. Houston, TX
9. Chicago, IL
10. Austin, TX
11. Seattle, WA
12. Atlanta, GA
13. Dallas, TX
14. Portland, OR
15. Sacramento, CA

Source: Clean Edge., 2010

“What is the Value of Green Jobs?”

1. Green Jobs are Local Jobs

Implementation of San Diego’s Climate Action Plan strategies can create good, local jobs. Energy efficiency and climate-related projects are performed locally, thereby requiring a San Diego-based labor force. These jobs will provide direct benefits to workers in the community. As these workers spend their “green job” income, local businesses benefit from these additional expenditures, increasing demand for products, and potentially leading to additional job so support the demand. As such, each new green job can blossom into additional local jobs.

2. Green Jobs are Predominately Middle Class Jobs

Green jobs pay living wages and provide opportunities for advancement along a career track of increasing skills and wages. The promotion of green jobs is consistent with the **White House's Task Force on the Middle Class** mandate: to find, highlight, and implement solutions to the economic challenges facing the American middle class. Moreover, the Federal government believes green jobs are an outgrowth of a larger movement to reform the way energy is created and used. The Obama Administration promotes green jobs as they represent a growth sector that provide good jobs (Middle Class Taskforce 2009).

3. Green Jobs can Provide Pathways out of Poverty

A majority of green jobs require more education than high school, but less than a four-year degree — and are well within reach for lower-skilled and low-income workers as long as they have access to effective training programs and appropriate supports. As illustrated by the **Table 2.3**, green jobs pay livable wages with or with/out a college degree.

Table 2.3 Clean Tech Compensation

Job Title	Industry	Median Pay	Typical Job Level	Typical Degree Level
Electrical/Electronic Equipment Assembler	PHE/EV	\$30,300	Mid-Level	HS/AD
Network Operations Center Technician	Smart Grid	\$45,100	Mid-Level	HS/AD
Smart Grid Field Technician	Smart Grid	\$39,500	Entry Level	HS/AD
Solar Energy System Installer	Solar PV	\$37,700	Entry Level	HS/AD
Solar Fabrication Technician	Solar PV	\$45,800	Entry Level	HS/AD
Wind Turbine Technician	Wind Power	\$48,300	Entry Level	HS/AD
Sheet Metal Worker	Wind Power	\$51,500	Mid-Level	HS/AD
Construction Superintendent	Wind Power	\$76,700	Senior Level	HS/AD
Solar Energy/Solar Power Project Developer	Solar PV	\$62,300	Entry Level	BD
Utility Program Manager	Smart Grid	\$77,900	Mid-Level	BD
Solar Installation Foreman	Solar PV	\$49,200	Entry-Level	BD
Research and Development Lab Technician	Solar PV	\$40,900	Entry-Level	BD
Energy Field Auditor	Green Building	\$43,700	Entry-Level	BD

Source: Clean Edge., 2010

Typical Job Level - There are three categories: 1) Entry-Level Positions where workers typically have less than 5 years of experience, 2) Mid-Level Positions where workers typically have between 5 and 10 years of experience, and 3) Senior-Level Positions where workers typically have more than 10 years of experience.

Typical Degree Level - This is the degree held by the majority of respondents.

HS/AD = High School Diploma/Associate's Degree

BD = Bachelor's Degree

Job Training

Many green jobs are brand new to the economy (e.g., Solar panel developers). Other green jobs have existed in the past, but increased demand has led to a need for additional skilled workers (e.g., Solar panel installers). These types of green jobs require specific skillsets to meet the green economy demands.

For workers that do not have the required skills to obtain these new jobs, there are several training options available through UCSD, UCSD extension, San Diego State University, San Diego State University extension, and the large system of community colleges. San Diego workers can obtain career assistance with “green jobs” from the California Economic Development Department, Cal JOBS, and the San Diego Workforce Partnership. In addition, the IBEW has the San Diego Electrical Training Center provides hands-on training for new apprentices or continuing education for experienced workers. These programs enable the local contractors to diversify and compete in new markets that help ensure growth in the industry.

The City’s Role as Leader

While the City may not be able to promise new jobs for, or change the underlying socioeconomic factors of, disadvantaged populations (e.g., age, health status), it can take action to provide equal access to opportunities for economic advancement and promotion of Social Equity. To provide support to disadvantaged communities and promote equitable job growth and economic opportunity, the CAP has identified specific economic and socioeconomic-specific goals, including:

- The Mayor’s Office of Economic Growth Services has a proactive Business Expansion, Attraction and Retention (BEAR) Team that works directly with key businesses in targeted industries to provide assistance and incentives that result in the retention and creation of jobs and investment in San Diego. The BEAR Team will partner with local workforce development agencies (e.g., San Diego Workforce Partnership) and colleges to identify resources for workforce development opportunities for disadvantaged populations.
- Create a Sustainable Workforce Engagement Public Advisory Committee to evaluate and make recommendations on equitable green job creation. The Committee should include a diverse group of stakeholders including representatives from local businesses, labor groups, and community-based organizations representing low-income communities.
- Require that all climate action work done through City programs comply with the City of San Diego’s Prevailing Wage Ordinance (Ordinance 20299, 9/26/2013).
- Continue to provide opportunities to disadvantaged populations for municipal projects consistent with the City’s Local Small Business Enterprise Ordinance (Ordinance 19922, 2/4/2010).
- Encourage local businesses working on climate plan-related projects and programs to give advanced notice of job opportunities to local communities through local community-based organizations, local educational institutions, and local media outlets.

REDUCING EMISSIONS



Green bike lane along Harbor Blvd.

Getting serious about reducing emissions

A greenhouse gas inventory is a collection of information about energy and emissions related activities within a specific scope or set of boundaries. The GHG emissions inventory evaluated activities within the City of San Diego for major economic sectors, including residential buildings, commercial and industrial buildings, transportation, water, solid waste, and municipal operations. The GHG emissions quantified in each of these sectors are associated with a variety of sources, including direct combustion of fossil fuels, purchased electricity, transportation (gasoline), solid waste, potable water, and materials. These sources are described in greater detail in **Appendix C**.

2010 Baseline Emissions

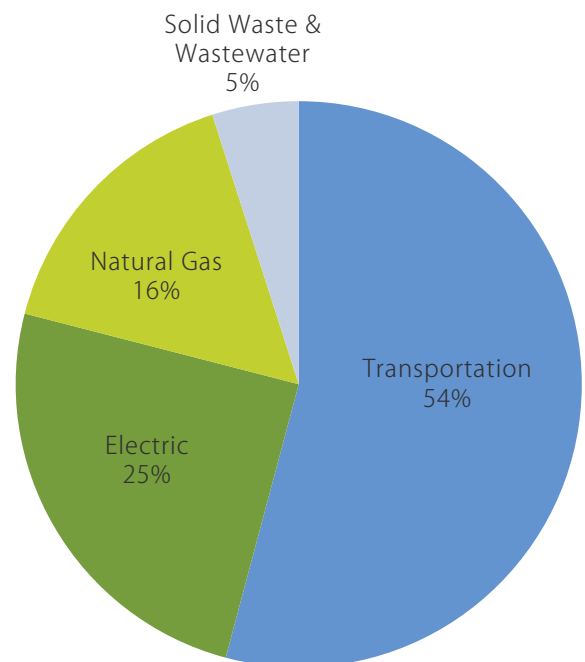
The 2010 baseline for the CAP is 13,084,619 Metric Tons of CO₂e. A detailed technical analysis of the City's 2010 emissions inventory can be found in Appendix C, GHG Emissions Inventory for City of San Diego, December 2013. The GHG emissions inventory may be thought of as a point-in-time estimate of emissions. It provides a baseline to begin the process of figuring out what we need to do to help stabilize and reverse climate change.

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). Waste emissions are calculated as a combination of GHG emissions from the landfill and the wastewater system.

Figure 3.1 illustrates the community-wide emissions. Although not represented, municipal emissions contribute approximately one percent of the City of San Diego's community-wide GHG emissions. While this number may seem relatively insignificant, the GHG reduction potential represents an opportunity for the City to take a leadership role in demonstrating how to reduce its own impacts. City operations include water treatment and distribution, wastewater treatment, solid waste and recycling collection, landfill management, street maintenance, and data management.

Figure 3.1: 2010 Community-wide Emissions Inventory

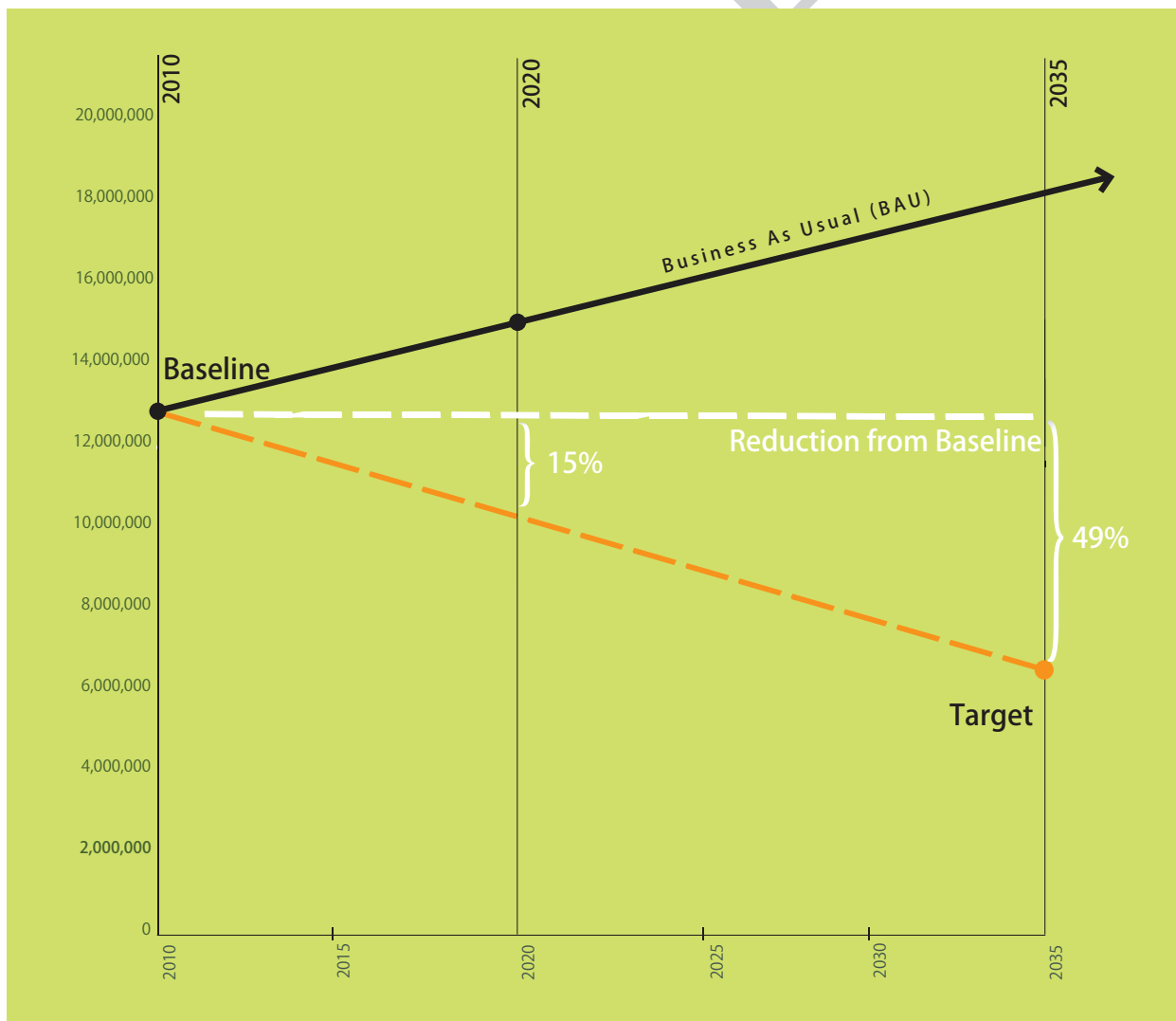


Business-as-usual Forecasts: 2020 and 2035

California has committed to reduce GHG emissions while accommodating a growing population and encouraging economic growth. The state's roadmap for achieving reductions the - Air Resources Board Scoping Plan - charts future emissions by comparing various policy options to a "business-as-usual" (BAU) scenario. The BAU scenario represents future GHG emissions without interventions to reduce emissions.

The CAP includes a BAU forecast for the City based on anticipated population, economic activity, and land use change. The BAU inventory uses the baseline as a starting point and applies a trend line to forecast emissions into the future. BAU assumes *Ceteris paribus*, that all else is held equal. Under this assumption, the only conditions subject to change during the period 2010-2035 are population growth and the corresponding demand for energy, transportation, and waste services.

Figure 3.2. Projected Targets and GHG Emissions Reduction



At current levels, the population growth for these target years would lead to an increase in community-wide GHG emissions by 15 MMT of CO₂e in 2020 and 18 MMT of CO₂e in 2035. To achieve the 2020 and 2035 reduction targets from the baseline, the City must implement strategies that reduce emissions to approximately 11 MMT of CO₂e in 2020 and 7 MMT of CO₂e in 2035.

Unlike many Climate Action Plans, which are often inspirational, policy-focused documents with qualitative direction to reduce GHG emissions, the San Diego CAP is based on quantitative analysis linked to real world data. The result is a comprehensive baseline and forecast that is specific to the City of San Diego. The CAP consists of three core components: (1) an inventory of recent GHG emissions as a baseline for future emissions reductions, (2) a “business-as-usual” forecast for emissions anticipated between 2010 and 2035, and (3) a categorized list of potential emissions reduction strategies as presented in the **Figure 3.2**.

The measures included in the CAP were identified as part of an iterative process with the Environmental and Economic Sustainability Task Force (EESTF) and City staff. The final list of recommendations includes measures, which have the greatest reduction potential. In addition, for those measures developed locally, the City must have the ability and authority to implement them. **Figure 3.3 and 3.4** breaks down the various GHG emission reductions by sector for both 2020 and 2035.

Figure 3.3: 2020 GHG Reductions by Sector

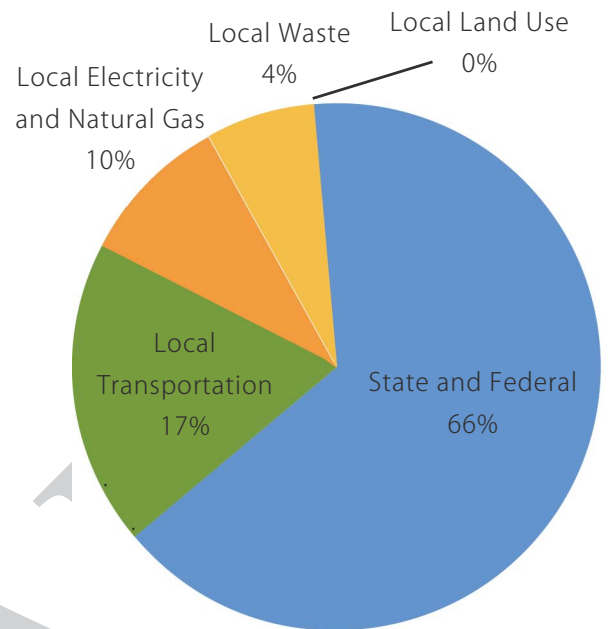
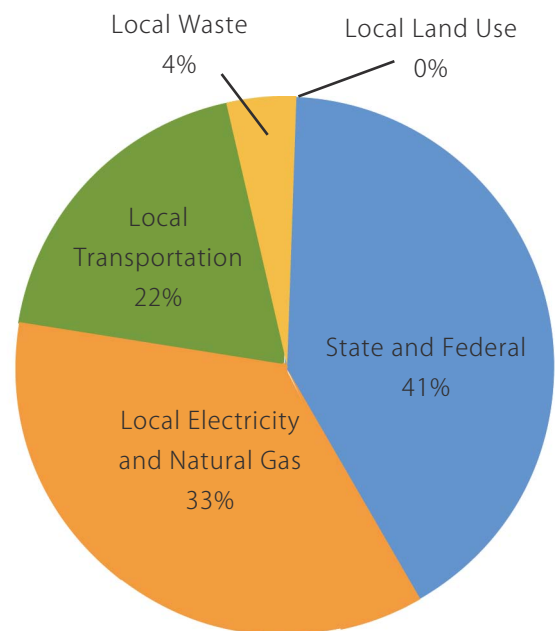


Figure 3.4: 2035 GHG Reductions by Sector



**Table 3.1 GHG Emissions Reduction Values
by Measure**

	2020		2035	
	MT CO ₂ e Reduction	% of total Reduction	MT CO ₂ e Reduction	% of total Reduction
Strategy 1: Energy & Water Efficient Buildings				
1.1 Reduce Commercial Energy Consumption	133,928	3%	271,878	2%
1.2 Reduce Residential Energy Consumption	75,478	2%	162,404	1%
1.3 Reduce Municipal Energy Consumption	8,817	0%	22,798	0%
1.4 Achieve Net Zero Energy for New Construction	1,744	0%	1,431	0%
1.5 Reduce Water Consumption	4,129	0%	0	0%
Strategy 2: Clean & Renewable Energy				
2.1 Achieve 100 Percent Solar Citywide	-	0%	2,819,901	26%
2.2 Increase Installed Photovoltaics	146,138	3%	-	0%
2.3 Increase Residential Solar Hot Water	52,867	1%	240,052	2%
2.4 Increase Commercial Solar Hot Water	10,295	0%	146,183	1%
Support Renewable Portfolio Standard (State)	906,081	21%	1,388,906	13%
Strategy 3: Multimodal Transportation Options				
3.1 Increase Commuter Mass Transit Ridership	127,534	3%	294,724	3%
3.2 Increase Commuter Biking	31,393	1%	74,563	1%
3.3 Increase Commuter Walking	1,068	0%	2,194	0%
3.4 Support SANDAG's GHG Reduction Targets	362,157	8%	785,301	7%
3.5 Reserve Parking for Electric Vehicles	32,438	1%	95,598	1%
3.6 Reduce Vehicle Fuel Consumption	3,571	0%	4,761	0%
3.7 Increase Electric Vehicle Miles Driven	172,922	4%	1,137,552	10%
3.8 Increase Municipal Zero Emissions Vehicles	13,160	0%	23,688	0%
3.9 Convert Municipal Waste Collection Trucks to NS	28,057	1%	37,409	0%
Pavley I thru 2016, CAFE 2017 -2035 (State & Federal)	1,298,460	30%	2,356,009	21%
Low Carbon Fuel Standard (State)	661,053	15%	726,012	7%
CARB Tire Pressure Program (State)	30,670	1%	23,041	0%
CARB HDV Aerodynamics (State)	9,970	0%	11,083	0%
Strategy 4: Zero Waste Management				
4.1 Divert Waste and Capture Landfill Emissions	174,546	4%	277,044	3%
4.2 Increase Methane Capture from Wastewater Treatment	108,647	2%	123,673	1%
Strategy 5: Urban Forest & Local Food Production				
5.1 Advocate for GHG Sequestration	0	0%	0	0%
5.2 Increase Urban Tree Coverage	2,020	0%	10,151	0%
5.3 Reduce Urban Heat Island Effect	0	0%	0	0%
Summary				
2010 Baseline	13,084,619			
Total Projected Emissions (BAU)	14,617,088		17,551,664	
Total Reductions from Energy Measures	1,339,477		5,053,554	
Total Reductions from Transportation Measures	2,772,452		5,571,935	
Total Reduction from Other Categories	285,213		410,868	
Total CO₂e Reductions	4,397,142		11,036,357	
Total Mitigated Emissions Levels	10,219,947		6,515,307	
Target Emission Levels	11,121,927		6,673,156	
Target Reduction Percentage	15.0%		49.0%	
Total Reduction Percentage	21.9%		50.2%	

The CAP also includes mandatory GHG reduction measures that have been adopted by Federal and State agencies. The City performed an analysis assuming full implementation of the proposed measures. When State and Federal mandates are fully implemented by 2020, these measures will provide approximately 66 percent of the 2020 reduction target and 41 percent of the 2035 target. **Table 3.1** summarizes the federal, state and local strategies' contribution to meeting both the 2020 and 2035 targets' goals assuming the proposed participation rates. For further information on the methodology of how the GHG reduction strategies were generated, refer to **Appendix C**.

Meeting the reduction targets will require broad-based participation

The City's ability to grow its population and economy while meeting the 15 and 49 percent reduction target will require a broad-based participation that no single emissions category, organization, or institution can achieve on its own. This is a challenge that must be shared by the entire community. Everyone who lives, works, shops, or plays in the city contributes to the community's GHG emissions, and everyone will need to be part of the solution.

The City has identified FIVE BOLD strategies to reduce GHG emissions to achieve the 2020 and 2035 targets:

- 1. ENERGY & WATER EFFICIENT BUILDINGS**
- 2. CLEAN & RENEWABLE ENERGY**
- 3. MULTIMODAL TRANSPORTATION OPTIONS**
- 4. ZERO WASTE MANAGEMENT**
- 5. URBAN FOREST & LOCAL FOOD PRODUCTION**

Local Strategies

Strategy 1: Energy & Water Efficient Buildings

Both Non-Residential and Residential Buildings offer opportunities for emissions reductions in new development as well as existing structures. Generally, building strategies focus on site-specific design and innovation, and technological improvements that increase energy efficiency and provide renewable energy generation. Because both non-residential and residential property owners, as well as their respective tenants, have different needs and demands, reduction strategies will consist of a mixture of regulatory mandates and incentives to improve building performance.

Strategy 2: Clean & Renewable Energy

Clean, renewable energy is essential to achieve the overall GHG reduction targets. With technologies rapidly improving, a small on-site power plant today can often produce energy more efficiently than centralized power plants. This “distributed generation” can serve one building, a campus, or an entire neighborhood.

The Growing Presence of Solar in San Diego

Since starting with less than one-percent renewable energy in 2002, SDG&E surpassed the 20 percent mark in renewable power delivered to retail customers in 2012, including sources such as wind, geothermal, biomass, hydroelectric and solar facilities. Recognizing this, SDG&E is on track to meet or exceed state mandate of 33% by 2020. (San Diego Gas & Electric 2013)

Strategy 3: Multimodal Transportation Options

Transportation strategies cover a broad range of activities that aim to reduce vehicle miles travelled (VMTs), improve mobility, and enhance vehicle fuel efficiency. Specific implementation measures involve changing land uses, adopting a new perspective on community design, promoting alternative modes of travel, and revising antiquated parking standards.

Environmental Benefits of Electric Vehicles

EVs in California, with a far cleaner electricity mix, reduce emissions by about 75 percent. Throughout the U.S., the benefits of driving on electricity will continue to improve as national power plant emission standards and state renewable energy targets continue to be adopted and implemented, while coal continues to become less and less economic compared to cleaner, cheaper alternatives. – Charge Ahead California (<http://chargeahead.org/>)

Strategy 4: Zero Waste Management

There are several different options for managing waste, including source reduction, recycling, and disposal. Methane gas is a by-product from the decomposition of organic material, and it is a GHG that has about 20 times the emitting impact as carbon dioxide. For this reason, landfills and wastewater treatment plants were among the first facilities required to report emissions under AB 32. Since a reduction of waste entering the landfill greatly reduces GHG emissions, the goal for the City is to achieve a 75 percent waste diversion rate by 2020. As of 2010, the City was making great progress towards this goal with a waste diversion rate of 68 percent.

Strategy 5: Urban Forest & Local Food Production

Local and regional agriculture is a major driver in the farm economy. Producers are

responding to skyrocketing demand for local and regional food by increasing production, creating new markets, and launching new businesses. Most recently in September 2013, California Governor Edmund G. Brown Jr. signed three bills to expand access to fresh, locally grown food in communities across California. "This farm to fork legislation expands access to fresh, local produce and will help make our communities healthier," said Governor Brown.

Close to 80 percent of the U.S. population lives in urban areas and depends on the essential ecological, economic, and social benefits provided by urban trees and forests. (USDA 2010). The City of San Diego recognizes this and has prioritized the expansion of the urban forest as a critical strategy to reduce GHG emissions.

Federal and State Strategies

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, 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 EPAct 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 strategy to reduce petroleum dependence, including increasing transportation energy efficiency by adhering to specific vehicle use and maintenance recommendations.

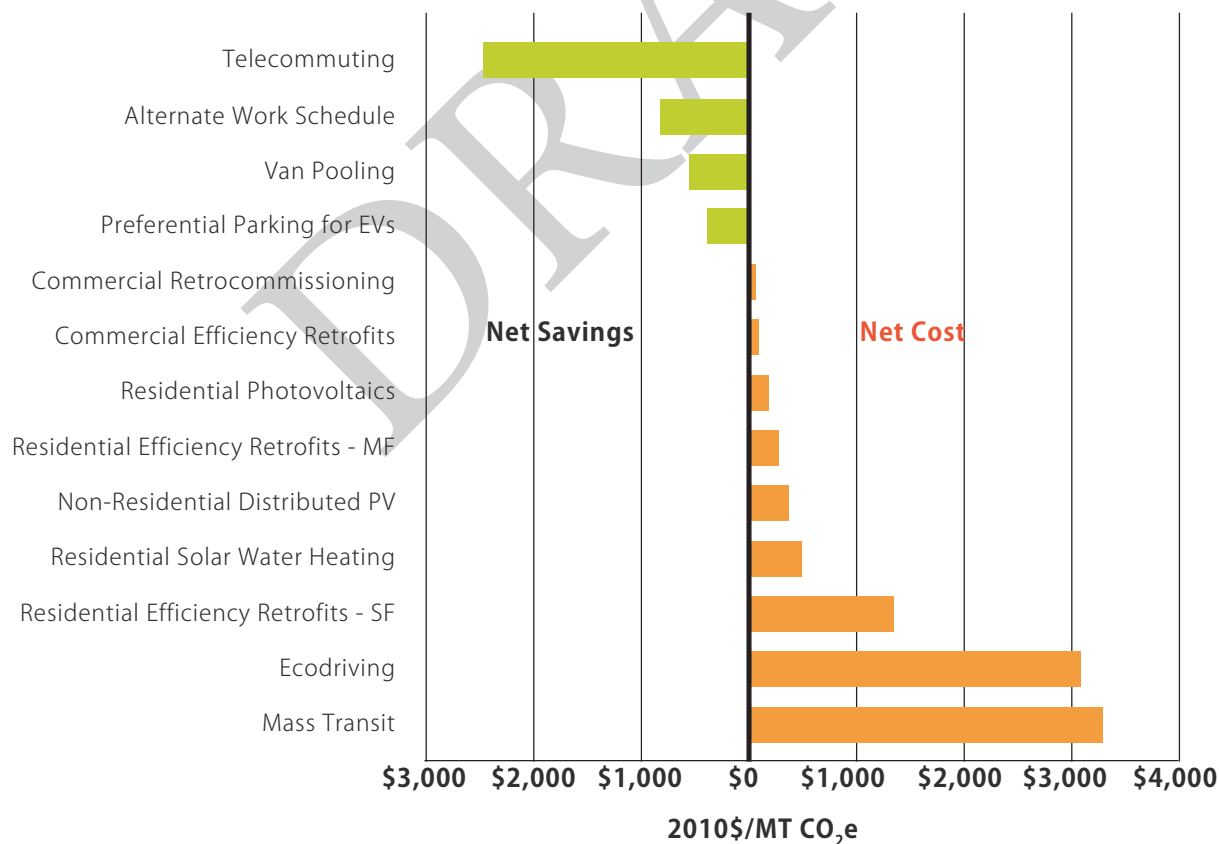
California Air Resources Board Heavy Duty Vehicle Regulations

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.

Cost-Effectiveness

A cost-effectiveness analysis of specific CAP measures revealed they are designed to be advantageous to San Diego businesses, residents, and government. For example, many of the CAP measures decrease energy costs for consumers. Through investments in renewable energy and efficiency measures, individuals, households and businesses will reduce costs and achieve long-term savings for operations and maintenance budgets. Similarly, the water conservation and efficiency activities will enhance citywide water security and decrease reliance on imported sources. **Table 3.2** provides a summary of the costs, which are shown in the net present value in 2010 dollars per metric ton of carbon dioxide equivalent (\$2010/MT CO₂e) for the measures analyzed.

Table 3.2. Cost-Effectiveness of Measures



IMPLEMENTATION AND MONITORING



Hillcrest Mixed-Use Neighborhood

Implementation is the key to a successful Climate Action Plan.

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

The Plan identifies the time frame (see Phasing Plan) for which each implementation mechanism will 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.

Administration and 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.

Budgeting

The City will incur costs to implement many of the implementation mechanisms. These include initial start-up, ongoing administration, and enforcement costs. While some actions will only require funding from public entities, others will result in increased costs for businesses and residents. However, most of the implementation mechanisms provide substantial savings in the long term. The City will be diligent in seeking strategic funding opportunities and the use of partnerships to share the cost.

The City of San Diego Climate Action Plan puts forward FIVE BOLD Strategies:

- 1. ENERGY & WATER EFFICIENT BUILDINGS**
- 2. CLEAN & RENEWABLE ENERGY**
- 3. MULTIMODAL TRANSPORTATION OPTIONS**
- 4. ZERO WASTE MANAGEMENT**
- 5. URBAN FOREST & LOCAL FOOD PRODUCTION**

Table 4.1 on the following page outlines each of these bold strategies and their related measures' GHG emissions reduction values. Next, each of these measures is further broken down into individual implementation mechanisms in discrete tables to assist the reader.

**Table 4.1 GHG Emissions Reduction Values
by Measure**

	2020		2035	
	MT CO ₂ e Reduction	% of total Reduction	MT CO ₂ e Reduction	% of total Reduction
Strategy 1: Energy & Water Efficient Buildings				
1.1 Reduce Commercial Energy Consumption	133,928	3%	271,878	2%
1.2 Reduce Residential Energy Consumption	75,478	2%	162,404	1%
1.3 Reduce Municipal Energy Consumption	8,817	0%	22,798	0%
1.4 Achieve Net Zero Energy for New Construction	1,744	0%	1,431	0%
1.5 Reduce Water Consumption	4,129	0%	0	0%
Strategy 2: Clean & Renewable Energy				
2.1 Achieve 100 Percent Solar Citywide	-	0%	2,819,901	26%
2.2 Increase Installed Photovoltaics	146,138	3%	-	0%
2.3 Increase Residential Solar Hot Water	52,867	1%	240,052	2%
2.4 Increase Commercial Solar Hot Water	10,295	0%	146,183	1%
Support Renewable Portfolio Standard (State)	906,081	21%	1,388,906	13%
Strategy 3: Multimodal Transportation Options				
3.1 Increase Commuter Mass Transit Ridership	127,534	3%	294,724	3%
3.2 Increase Commuter Biking	31,393	1%	74,563	1%
3.3 Increase Commuter Walking	1,068	0%	2,194	0%
3.4 Support SANDAG's GHG Reduction Targets	362,157	8%	785,301	7%
3.5 Reserve Parking for Electric Vehicles	32,438	1%	95,598	1%
3.6 Reduce Vehicle Fuel Consumption	3,571	0%	4,761	0%
3.7 Increase Electric Vehicle Miles Driven	172,922	4%	1,137,552	10%
3.8 Increase Municipal Zero Emissions Vehicles	13,160	0%	23,688	0%
3.9 Convert Municipal Waste Collection Trucks to NS	28,057	1%	37,409	0%
Pavley I thru 2016, CAFE 2017 -2035 (State & Federal)	1,298,460	30%	2,356,009	21%
Low Carbon Fuel Standard (State)	661,053	15%	726,012	7%
CARB Tire Pressure Program (State)	30,670	1%	23,041	0%
CARB HDV Aerodynamics (State)	9,970	0%	11,083	0%
Strategy 4: Zero Waste Management				
4.1 Divert Waste and Capture Landfill Emissions	174,546	4%	277,044	3%
4.2 Increase Methane Capture from Wastewater Treatment	108,647	2%	123,673	1%
Strategy 5: Urban Forest & Local Food Production				
5.1 Advocate for GHG Sequestration	0	0%	0	0%
5.2 Increase Urban Tree Coverage	2,020	0%	10,151	0%
5.3 Reduce Urban Heat Island Effect	0	0%	0	0%
Summary				
2010 Baseline	13,084,619			
Total Projected Emissions (BAU)	14,617,088		17,551,664	
Total Reductions from Energy Measures	1,339,477		5,053,554	
Total Reductions from Transportation Measures	2,772,452		5,571,935	
Total Reduction from Other Categories	285,213		410,868	
Total CO₂e Reductions	4,397,142		11,036,357	
Total Mitigated Emissions Levels	10,219,947		6,515,307	
Target Emission Levels	11,121,927		6,673,156	
Target Reduction Percentage	15.0%		49.0%	
Total Reduction Percentage	21.9%		50.2%	

Phasing

The CAP focuses on reducing emissions in sectors where City action is most needed and will have the greatest impact: primarily transportation, building energy, and waste. However, with constraints to resources (time and budget), the complete spectrum of measures cannot be implemented simultaneously.

To optimize resource efficiency and overall effectiveness of implementing the GHG emission reduction measures, the CAP is divided into **three distinct phases**:

Phase 1: Early Action Measures January 1, 2015- December 31, 2017

This phase includes short-term actions that are high-priority and return large emission reductions. In addition, short-term actions will include laying the foundation for longer-term actions. Diligent work in the Phase 1 should mitigate risks and increase chances for success of measures and programs implemented in the later phases. Annual monitoring of implemented measures will inform the City, and public, of the CAP's GHG emissions reduction progress.

The Early Action Measures are necessary for the City to plan for, and reach, its 2020 and 2035 GHG Emission Reduction Targets.

Phase 2: Mid-term Measure January 1, 2018- December 31, 2020

This phase includes medium term actions specifically focused helping the City to reach its 2020 GHG Emission Reduction Target.

Phase 3: Longer-Term Measures 2021-2035

Long-term actions will take more time to implement but are essential for meeting the City of San Diego's 2035 GHG emissions reduction goals. While City government action is the primary focus of the 2014 CAP, many others in the community (as well as outside of it) will need to take action to achieve our bold vision.

Legend to Implementation Tables

Measure = Corresponds to the FIVE Bold Strategies. Description of greenhouse gas emission reduction action

GHG Reductions =GHG reduction potential of each measure in carbon dioxide equivalents

Target Indicators = Percentage of greenhouse gas emissions to be reduced by a defined time frame

Lead Department = Responsible City party for ensuring implementation

General Plan Policies = Referenced 2008 General Plan policy to ensure consistency

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

Implementation Phases = Implementation time frame broken into three distinct phases of 2015 - 2017; 2018-2020; and 2031-2035

STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

Measure 1.1: Reduce Commercial Energy Consumption

2020		2035													
GHG REDUCTIONS	133,928 MT/CO ₂ e	271,878 MT/CO ₂ e													
TARGET INDICATORS	Reduce commercial building energy consumption by 10% by 2020.	Reduce commercial building energy consumption by 60% by 2035.													
LEAD DEPARTMENT:	Environmental Services Department														
GENERAL PLAN POLICIES:	CE-I.7, CE-I.5b, CE-I.13														
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:													
1.1.1 Building upon the existing state requirements to disclose energy use starting in 2014, develop a Commercial Water and Energy Conservation Ordinance by 2020 to be phased-in dependent on building age to require installation of energy and water conservation features before completing a sale or lease transaction, or at time of major renovation or remodeling. 1.1.2 Implement and expand current Property-Assisted Clean Energy (PACE) financing program by 2015.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td>✓</td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓			2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035													
✓															
2015-2017	2018-2020	2021-2035													
	✓														

STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

Measure 1.2: Reduce Residential Energy Consumption

	2020	2035
GHG REDUCTIONS	75,478 MT/CO₂e	162,404 MT/CO₂e
TARGET INDICATORS	Reduce residential building energy consumption by 10% by 2020.	Reduce residential building energy consumption by 60% by 2035.

LEAD DEPARTMENT: Environmental Services Department

GENERAL PLAN POLICIES: CE-I.7, CE-I.5b, CE-I.13

IMPLEMENTING MECHANISMS:

1.2.1

Adopt a Residential Water and Energy Conservation Ordinance by 2015 to require building energy consumption disclosure at time of sale or lease.

2015-2017



2018-2020

2021-2035

1.2.2

Expand the Commercial Water and Energy Conservation Ordinance by 2020 to be phased-in dependent on building age to require installation of energy and water conservation features before completing a sale or lease transaction, or at time of major renovation or remodeling.

2015-2017

2018-2020

2021-2035

1.2.3

Implement and expand current Property-Assisted Clean Energy (PACE) financing program by 2015.

2015-2017

2018-2020

2021-2035

STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

Measure 1.3: Reduce Municipal Energy Consumption

	2020	2035	
GHG REDUCTIONS	8,817 MT/CO ₂ e	22,798 MT/CO ₂ e	
TARGET INDICATORS	Reduce energy consumption at municipal facilities by 10% by 2020.	Reduce energy consumption at municipal facilities by 60% by 2035.	
LEAD DEPARTMENT:	Environmental Services Department		
GENERAL PLAN POLICIES:	CE-I.1 through CE-I.13		
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:	
1.3.1 Implement a Smart Energy Management & Monitoring System (SEMMS) within all municipal facilities to monitor and track energy cost and consumption. Based upon results, identify opportunities for greater efficiency and demand response by 2016. 1.3.2 Implement the City’s Energy Strategy Goal to reduce municipal facility energy consumption by 50 megawatts, using 2001 as a baseline year (Resolution #R-295074). Require status report by 2016 to be available for the public. 1.3.3 Require LEED Silver for Existing Buildings: Operations and Maintenance Certification for all existing municipal facilities over 10,000 square feet by 2020. 1.3.4 Implement the City’s Energy Strategy Objective by retrofitting all municipally-owned street lighting and outdoor lighting to broad spectrum by 2016.	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035
	✓		
2015-2017	2018-2020	2021-2035	
✓			

STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

Measure 1.4: Achieve Net Zero Energy for New Construction

	2020	2035						
GHG REDUCTIONS	1,744 MT/CO ₂ e	1,431 MT/CO ₂ e						
TARGET INDICATORS	Achieve zero net energy for new residential buildings by 2020.	Achieve zero net energy for new commercial buildings by 2030.						
LEAD DEPARTMENT:	Development Services Department							
GENERAL PLAN POLICIES:	CE-A.5, UD-A.4, UD-A.5i							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
1.4.1 Adopt Zero Net Energy Ordinance by 2020 for all new residential buildings.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td>✓</td><td></td></tr></table>	2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							
1.4.2 Adopt Zero Net Energy Ordinance by 2030 for all new commercial buildings.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td></td><td>✓</td></tr></table>	2015-2017	2018-2020	2021-2035			✓
2015-2017	2018-2020	2021-2035						
		✓						

STRATEGY 1: ENERGY & WATER EFFICIENT BUILDINGS

Measure 1.5: Reduce Water Consumption

	2020	2035	
GHG REDUCTIONS	4,129 MT/CO ₂ e	0 MT/CO ₂ e	
TARGET INDICATORS	Reduce daily per capita water consumption to 142 gallons by 2020 city-wide.	Reduce daily per capita water consumption to 100 gallons by 2035 city-wide.	
LEAD DEPARTMENT:	Environmental Services Department		
GENERAL PLAN POLICIES:	CE-A.11e, CE-A.11h, CE-A.11i, CE-D.1h, CE-D.1i, CE-D.1j, CE-D.1k, CE-D.1l, CE-D.1m, CE-I.4		
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:	
1.5.1 Adopt a Water and Energy Disclosure Ordinance by 2016 to require water consumption data for residential and non-residential buildings, at time of sale or lease, by 2016.	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035
	✓		
1.5.2 Record the annual volume percentage of recycled water used, including grey water, and indirect potable reuse by 2015. Include plans for increasing future annual volumes of recycled water/potable reuse. Also report the number of greywater permits filed for systems discharging more than 250 gallons per day.	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035
		✓	
1.5.3 Adopt a water rate and billing structures that promotes efficiency and conservation by 2018.	2015-2017	2018-2020	2021-2035
		✓	
	2015-2017	2018-2020	2021-2035
1.5.4 By 2016, expand Plumbing Retrofit Upon Re-Sale Ordinance to include leases, major renovations, and outdoor water use.	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035

STRATEGY 2: CLEAN & RENEWABLE ENERGY

Measure 2.1: Achieve 100 Percent Solar Citywide

	2020	2035
GHG REDUCTIONS	0 MT/CO ₂ e	2,819,901 MT/CO ₂ e
TARGET INDICATORS		Additional renewable energy supplies to achieve 100% renewable electricity by 2035 city-wide.
LEAD DEPARTMENT:	Environmental Services Department	
GENERAL PLAN POLICIES:	CE-A.2, CE-A.5, CE-A.6, CE-I.5, CE-I.10, CE-I.11 UD-A.4	
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:
2.1.1 Complete a city-wide Community Choice Aggregation (CCA) feasibility study by 2015.	2015-2017	2018-2020
	✓	
	2021-2035	
2.1.2 Advocate for policies to promote additional procurement of renewable energy by our local utility, such as increased renewable energy requirements, local procurement mechanisms, and clean distributed generation feed-in tariffs.	2015-2017	2018-2020
		✓
	2021-2035	
2.1.3 Advocate and apply for Direct Access opportunities for energy procurement for the City of San Diego.	2015-2017	2018-2020
		✓
	2021-2035	

STRATEGY 2: CLEAN & RENEWABLE ENERGY

Measure 2.2: Increase Installed Photovoltaics

	2020	2035						
GHG REDUCTIONS	146,138 MT/CO ₂ e	0 MT/CO ₂ e						
TARGET INDICATORS	Increase total installed photovoltaics to 350 MW of PV by 2020 city-wide.	Increase total installed photovoltaics to 2000-2500 MW of PV by 2035 city-wide.						
LEAD DEPARTMENT:	Development Services Department							
GENERAL PLAN POLICIES:	CE-A.2, CE-A.5, CE-A.6, CE-I.5, CE-I.10, CE-I.11 UD-A.4							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
2.2.1 Update building code to require all new residential and non-residential to be pre-wired for solar photovoltaics by 2016.	<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td>✓</td><td></td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								
2.2.2 Implement the City's Solar Energy Implementation Plan by 2020.	<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td></td><td>✓</td><td></td></tr></table>		2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							
2.2.3 Implement and expand current Property-Assisted Clean Energy (PACE) financing program by 2015.	<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td>✓</td><td></td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 2: CLEAN & RENEWABLE ENERGY

Measure 2.3: Increase Residential Solar Hot Water

	2020	2035												
GHG REDUCTIONS	52,867 MT/CO ₂ e	240,052 MT/CO ₂ e												
TARGET INDICATORS	• Install solar water heaters on 10% of existing residential and 25% of new residential by 2020.	• Install solar water heaters on 75% of existing residential and 100% of new residential by 2035.												
LEAD DEPARTMENT:	Development Services Department													
GENERAL PLAN POLICIES:	CE-A.2, CE-A.5, CE-I.5, CE-I.10, CE-I.11 UD-A.4													
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:												
2.3.1 Update building code to require all new residential and commercial buildings to pre-plumb for solar water heaters by 2016. 2.3.2 Require solar water heating on all new residential buildings by 2016 and include solar water heating as an efficiency measure included in the Residential Water and Energy Conservation Ordinance.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓			2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035												
✓														
2015-2017	2018-2020	2021-2035												
✓														

STRATEGY 2: CLEAN & RENEWABLE ENERGY

Measure 2.4: Increase Commercial Solar Hot Water

	2020	2035						
GHG REDUCTIONS	10,295 MT/CO₂e	146,183 MT/CO₂e						
TARGET INDICATORS	Replace 10% of non-residential natural gas used to heat water with solar water heaters by 2020.	Replace 40% of non-residential natural gas used to heat water with solar water heaters by 2035.						
LEAD DEPARTMENT:	Development Services Department							
GENERAL PLAN POLICIES:	CE-A.2, CE-A.5, CE-I.5, CE-I.10, CE-I.11 UD-A.4							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
2.4.1 Update building code to require all new residential and commercial buildings to pre-plumb for solar water heaters by 2014.		<table> <tr> <th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr> <tr> <td>✓</td><td></td><td></td></tr> </table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.1 Increase Commuter Mass Transit Ridership

	2020	2035	
GHG REDUCTIONS	127,534 MT/CO ₂ e	294,724 MT/CO ₂ e	
TARGET INDICATORS	• Increase commuter ridership on mass transit to 12% in 2020 in transit-oriented development corridors and high-quality transit areas.	• Increase commuter ridership on mass transit to 25% in 2035 in transit-oriented development corridors and high-quality transit areas.	
LEAD DEPARTMENT:	Planning Department		
GENERAL PLAN POLICIES:	CE-A.2, ME-B.1, ME-B.2, ME-B.3, ME-B.9		
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:	
3.1.1 Develop Transit-Oriented Development (TOD) Plan by 2016 that implements the General Plan City of Villages strategy to direct growth into compact, walkable, mixed-use centers linked by transit. 3.1.2 Prepare and implement report with measures to increase commuting by transit for City of San Diego employees by 2015. 3.1.3 Establish new priority ranking for prioritizing infrastructure improvements in high quality transit areas that will be integrated into Capital Improvement Priority Matrix, Community Development Block Grant opportunities and Public Facilities Financing Plans by 2015. 3.1.4 Establish new Level of Service for vehicles in areas where transit exists by 2020.	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035
	✓		
	2015-2017	2018-2020	2021-2035
	2015-2017	2018-2020	2021-2035
		✓	

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.2: Increase Commuter Biking

	2020	2035						
GHG REDUCTIONS	31,393 MT/CO ₂ e	74,563 MT/CO ₂ e						
TARGET INDICATORS	• Increase commuter biking to 6% in 2020 in high-quality transit areas.	• Increase commuter biking to 18.5% in 2035 in high-quality transit areas.						
LEAD DEPARTMENT:	Transportation and Public Works							
GENERAL PLAN POLICIES:	CE-A.2, ME-E.6, ME-F.5, ME-F.6							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
3.2.1 Complete 5-Year Strategic Implementation Plan of the Bike Master Plan by 2015, including establishing implementation performance measures such as SANDAG bike counts, an evaluation of the number of network miles, green lanes, buffered bike lanes, number of bike racks installed, number of miles of lane diets, and the number of miles paved and restriped lanes.	<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								
3.2.2 Implement bicycle sharing program with DecoBikes by 2015.	<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								
3.2.3 Establish new priority ranking for prioritizing infrastructure improvements in high quality transit areas that will be integrated into Capital Improvement Priority Matrix, Community Development Block Grant opportunities and Public Facilities Financing Plans by 2015.	<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.3 Increase Commuter Walking

	2020	2035						
GHG REDUCTIONS	1,068 MT/CO ₂ e	2,194 MT/CO ₂ e						
TARGET INDICATORS	Increase commuter walking to 3.3% in 2020 in high quality transit areas.	Increase commuter walking to 6.5% in 2035 in high quality transit areas.						
LEAD DEPARTMENT:	Planning Department							
GENERAL PLAN POLICIES:	CE-A.2, ME-A.6, ME-A.7, ME-A.8, ME-A.9							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
3.3.1 Update Land Development Code to prohibit surface parking lots as stand alone land use in transit corridors by 2016.		<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								
3.3.2 Reduce parking citywide through Land Development Code by 2018.		<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td></td><td>✓</td><td></td></tr></table>	2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							
3.3.3 Develop a Parking Plan by 2020 to include measures such as unbundled parking for commercial and residential sectors in urban areas, flexible parking pricing to reflect supply and demand in City neighborhoods.		<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td></td><td>✓</td><td></td></tr></table>	2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.4: Support SANDAG's GHG Reduction Targets

	2020	2035						
GHG REDUCTIONS	362,157 MT/CO₂e	785,301 MT/CO₂e						
TARGET INDICATORS	Support SANDAG in achieving target of reducing per capita emissions from passenger cars and light duty trucks by 7% in 2020.	Support SANDAG in achieving target of reducing per capita emissions from passenger cars and light duty trucks by 13% in 2035.						
LEAD DEPARTMENT:	Planning Department							
GENERAL PLAN POLICIES:	CE-A.13, ME-C.2, ME-E.5, ME-J.8							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
3.4.1 By 2035, implement SANDAG measures to meet GHG reduction targets from passenger vehicles to comply with SB 375, including telecommuting, carpooling, vanpooling, buspooling, bottleneck relief, HOV/HOT lanes, and safe routes to school.		<table> <tr> <th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr> <tr> <td>✓</td><td>✓</td><td>✓</td></tr> </table>	2015-2017	2018-2020	2021-2035	✓	✓	✓
2015-2017	2018-2020	2021-2035						
✓	✓	✓						

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STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.5: Reserve Parking for Electric Vehicles

	2020	2035						
GHG REDUCTIONS	32,438 MT/CO₂e	95,598 MT/CO₂e						
TARGET INDICATORS	Reserve 10% of parking spaces for electric vehicles by 2020.	Reserve 20% of parking spaces for electric vehicles by 2035.						
LEAD DEPARTMENT:	Economic Development Department							
GENERAL PLAN POLICIES:	ME-E.6, ME-G.4							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
3.5.1 Update municipal code to require designation of preferential parking spaces to support electric vehicle (EV) use and EV charging opportunities by 2015.		<table> <tr> <th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr> <tr> <td>✓</td><td></td><td></td></tr> </table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.6: Reduce Vehicle Fuel Consumption

	2020	2035												
GHG REDUCTIONS	3,571 MT/CO ₂ e	4,761 MT/CO ₂ e												
TARGET INDICATORS	• Retime traffic signals on 15 intersections and install roundabouts on 15 intersections by 2020.	• Install roundabouts on 20 intersections by 2035.												
LEAD DEPARTMENT:	Transportation and Public Works Departments													
GENERAL PLAN POLICIES:	ME-C.4													
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:												
3.6.1 Adopt an Anti-idling Ordinance for school areas by 2016. Evaluate Community-wide implementation by 2035. Evaluate other fuel conservation measures such as the potential and costs of electric charging at truck stops and borders to reduce truck idling. 3.6.2 Prepare a Traffic Signal Master Plan to interconnect every traffic signal citywide including a traffic light synchronization plan along arterials that need coordination to reduce congestion. Evaluate and prepare a plan by 2016 to increase the number of roundabouts with the goal of reducing congestion.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table> <table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓			2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035												
✓														
2015-2017	2018-2020	2021-2035												
✓														

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.7: Increase Electric Vehicle Miles Driven

	2020	2035						
GHG REDUCTIONS	172,922 MT/CO ₂ e	1,137,552 MT/CO ₂ e						
TARGET INDICATORS	• Increase the percentage of miles driven by electric vehicles to 4% by 2020.	• Increase the percentage of miles driven by electric vehicles to 25% by 2035.						
LEAD DEPARTMENT:	Economic Development and Environmental Services Departments							
GENERAL PLAN POLICIES:	CE-F.1, CE-F.5							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
3.7.1 Continue to expand the electric vehicle car share program to all the communities by 2015.		<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								
3.7.2 Develop an Electric-Vehicle Charging Network Siting Plan by 2016.		<table><tr><td>2015-2017</td><td>2018-2020</td><td>2021-2035</td></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.8: Increase Municipal Zero Emissions Vehicles

	2020	2035
GHG REDUCTIONS	13,160 MT/CO₂e	23,688 MT/CO₂e
TARGET INDICATORS	Increase number of zero emissions passenger and light duty trucks in the municipal fleet to 50% by 2020.	Increase number of zero emissions passenger and light duty trucks in the municipal fleet to 100% by 2035.
LEAD DEPARTMENT:	Purchasing and Contracting and Economic Development Departments	
GENERAL PLAN POLICIES:	CE-F.1, CE-F.5	
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:
3.8.1 Develop a plan to replace a number of city's fleet vehicles (i.e. general services vehicles) with a fleet of electric or plug-in hybrid vehicles by 2016.	2015-2017	2018-2020
	✓	
	2021-2035	
3.8.2 Develop an Electric-Vehicle Charging Network Siting Plan by 2016.	2015-2017	2018-2020
	✓	
	2021-2035	
3.8.3 Update AR 90.73 by 2014 to require 50% zero-emissions passenger and light-duty municipal vehicles by 2020, and 100% by 2035.	2015-2017	2018-2020
		✓
	2021-2035	

STRATEGY 3: MULTIMODAL TRANSPORTATION OPTIONS

Measure 3.9: Convert Municipal Waste Collection Trucks to NG

	2020	2035						
GHG REDUCTIONS	28,057 MT/CO ₂ e	37,409 MT/CO ₂ e						
TARGET INDICATORS		Convert entire City collection fleet to compressed natural gas by 2025.						
LEAD DEPARTMENT:	Environmental Services Department							
GENERAL PLAN POLICIES:	CE-F.1, CE-F.5							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
3.9.1 Implement a plan to phase-in conversion of collection fleet beginning 2018.		<table> <tr> <th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr> <tr> <td></td><td>✓</td><td>✓</td></tr> </table>	2015-2017	2018-2020	2021-2035		✓	✓
2015-2017	2018-2020	2021-2035						
	✓	✓						

STRATEGY 4: ZERO WASTE MANAGEMENT

Measure 4.1: Divert Waste and Capture Landfill Emissions

	2020	2035						
GHG REDUCTIONS	174,546 MT/CO ₂ e	277,044 MT/CO ₂ e						
TARGET INDICATORS	Divert 75% of trash from landfill by 2020. Capture 80% methane from landfills by 2020.	Strive for zero waste disposed by 2040. Achieve levels required by CARB for methane capture by 2035.						
LEAD DEPARTMENT:	Environmental Services Department							
GENERAL PLAN POLICIES:	CE-A.2, CE-A.8, CE-A.9, CE-E.6, CE-M.3, CE-N.4, CE-N.7, PF-I.1, PF-I.2							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
4.1.1 Require organic waste diversion programs to meet goals of 175,000 tons by 2020 and 240,000 tons by 2035.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td>✓</td><td>✓</td></tr></table>	2015-2017	2018-2020	2021-2035		✓	✓
2015-2017	2018-2020	2021-2035						
	✓	✓						
4.1.2 Adopt and begin implementation of the Zero Waste Plan by 2014. Develop interim 2035 waste goal to be consistent with Climate Action Plan (CAP) planning horizon.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td>✓</td></tr></table>	2015-2017	2018-2020	2021-2035	✓		✓
2015-2017	2018-2020	2021-2035						
✓		✓						
4.1.3 Require construction/building/remodeling projects to recycle 75% of construction waste by 2025.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td></td><td>✓</td></tr></table>	2015-2017	2018-2020	2021-2035			✓
2015-2017	2018-2020	2021-2035						
		✓						
4.1.4 Develop a Resource Recovery Center at Miramar Landfill to maximize waste diversion by 2020.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td>✓</td><td></td></tr></table>	2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							

IMPLEMENTING MECHANISMS:

IMPLEMENTATION PHASES:

4.1.5

Adopt a plastic bag ordinance by 2014.

2015-2017



2018-2020

2021-2035

4.1.6

Convert curbside recycling and curbside greenery collection programs to weekly and add kitchen scraps to greenery.

2015-2017

2018-2020

2021-2035



4.1.7

Encourage and collaborate with others on extended producer responsibility bills for carpet, bulky items, medical sharps, non-rechargeable household batteries, pharmaceuticals and other problem materials.

2015-2017



2018-2020



2021-2035



4.1.8

Ensure consistency with ARB's Landfill Methane Control Measure 2010, report on effectiveness of gas collection system on an annual basis to ARB.

2015-2017



2018-2020



2021-2035



STRATEGY 4: ZERO WASTE MANAGEMENT

Measure 4.2: Increase Methane Capture from Wastewater Treatment

	2020	2035						
GHG REDUCTIONS	108,647 MT/CO₂e	123,673 MT/CO₂e						
TARGET INDICATORS	Capture 98% of waste gas from wastewater treatment in 2020.	Capture 98% of waste gas from wastewater treatment in 2035.						
LEAD DEPARTMENT:	Environmental Services Department							
GENERAL PLAN POLICIES:	CE-A.2							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
4.2.1 Provide status report on the effectiveness of digesters' gas collection system by 2020.		<table> <tr> <th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr> <tr> <td></td><td>✓</td><td></td></tr> </table>	2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							

STRATEGY 5: URBAN FOREST & LOCAL FOOD PRODUCTION

Measure 5.1: Advocate for GHG Sequestration

	2020	2035						
GHG REDUCTIONS	0 MT/CO ₂ e	0 MT/CO ₂ e						
TARGET INDICATORS	Advocate for sequestration of GHG through land use practices.	Advocate for sequestration of GHG through land use practices.						
LEAD DEPARTMENT:	Development Services and Planning Departments							
GENERAL PLAN POLICIES:	CE-A.2, CE-J.1, CE-J.2, CE-J.3							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
5.1.1 Develop a City-wide GHG Emissions Sequestration Report that provides land use practices that have successfully sequestered GHG by 2020.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td>✓</td><td></td></tr></table>	2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035						
	✓							
5.1.2 By December 2014 complete both an Urban Tree Canopy (UTC) assessment and update Urban Forest Management Plan; implement actions recommended by the UFMP starting 2015.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								
5.1.3 Hire a Urban Forest Manager by 2016.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 5: URBAN FOREST & LOCAL FOOD PRODUCTION

Measure 5.2: Increase Urban Tree Coverage

	2020	2035						
GHG REDUCTIONS	2,020 MT/CO₂e	10,151 MT/CO₂e						
TARGET INDICATORS	Increase tree coverage by 15% by 2020.	Increase tree coverage by 25% by 2035.						
LEAD DEPARTMENT:	Development Services and Planning Departments							
GENERAL PLAN POLICIES:	CE-A.2, CE-J.1, CE-J.2, CE-J.3							
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:						
5.2.1 Develop an Urban Tree Planting Program by July 2015 requiring the installation of tree(s) and/or pervious surfaces for all new residential, commercial, and industrial development and redevelopment, proportionately based on square footage of developments, with allowances for off-site installation in higher priority areas, including: - Neighborhoods most lacking tree cover and most vulnerable to heat island effect; - High-energy use neighborhoods as an energy reduction strategy, where it will not interfere with solar installations; and - Areas in need of stormwater retention capabilities of trees and permeable surfaces.		<table> <tr> <th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr> <tr> <td>✓</td><td></td><td></td></tr> </table>	2015-2017	2018-2020	2021-2035	✓		
2015-2017	2018-2020	2021-2035						
✓								

STRATEGY 5: URBAN FOREST & LOCAL FOOD PRODUCTION

Measure 5.3: Reduce Urban Heat Island Effect

2020		2035													
GHG REDUCTIONS	0 MT/CO ₂ e	0 MT/CO ₂ e													
TARGET INDICATORS	Implement strategies to reduce the urban heat island effect.	Implement strategies to reduce the urban heat island effect.													
LEAD DEPARTMENT:	Development Services and Planning Departments														
GENERAL PLAN POLICIES:	CE-A.2, CE-J.1, CE-J.2, CE-J.3														
IMPLEMENTING MECHANISMS:		IMPLEMENTATION PHASES:													
5.3.1 Seek funding to prepare a Parks Master Plan by 2016 that prioritizes parks in underserved communities; continue park planning efforts through community plan updates and focused planning efforts. 5.3.2 Update City Design Guidelines and Code to require new and redeveloped industrial, commercial, public and multi-family residential projects to provide 30% of total project site footprint in permeable softscapes using native or drought tolerant planting by 2020. Where the project demonstrates infeasibility, the requirement may be met offsite, if it provides a net pervious surface increase above what the receiving area would be required to provide.		<table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td>✓</td><td></td><td></td></tr></table> <table><tr><th>2015-2017</th><th>2018-2020</th><th>2021-2035</th></tr><tr><td></td><td>✓</td><td></td></tr></table>		2015-2017	2018-2020	2021-2035	✓			2015-2017	2018-2020	2021-2035		✓	
2015-2017	2018-2020	2021-2035													
✓															
2015-2017	2018-2020	2021-2035													
	✓														

MONITORING & REPORTING

Measure 1: CAP Annual Monitoring Report

LEAD DEPARTMENT: Environmental Services Department

IMPLEMENTING MECHANISMS:

IMPLEMENTATION PHASES:

1.1 Designate responsible parties

The City's Environmental Services Department will designate staff to take the lead on the GHG emissions inventory and will coordinate with staff from other City departments to monitor citywide progress on the CAP by 2015.

2015-2017	2018-2020	2021-2035
✓		

1.2 Create a CAP AMR

The CAP AMR will include a macro-inventory of community-wide GHG emissions as a means to track success in meeting the 2020 target. It will also include specific actions, proposed outcomes and a timeline with milestones for the most significant GHG reduction measures and adaptation proposals.

2015-2017	2018-2020	2021-2035
✓	✓	✓

1.3 Citywide data collection and sharing

The City commits to sharing data with other government entities, academic institutions, military, corporate, and civic organizations.

2015-2017	2018-2020	2021-2035
✓	✓	✓

1.4 Amend municipal codes

City policies, plans and codes will be evaluated and updated as needed to ensure the CAP reduction targets are met. Any actions requiring City Council authority will be brought back to City Council for approval.

2015-2017	2018-2020	2021-2035
✓	✓	✓

MONITORING & REPORTING

Measure 2: Carbon Inventory Verification

LEAD DEPARTMENT: Environmental Services Department

IMPLEMENTING MECHANISMS:

2.1 Third-party Verification

The City of San Diego shall have the annual carbon (GHG) inventory verified through a third-party to ensure it is accurate and complete. By voluntarily submitting the carbon inventory for third-party verification, the City hopes to lend credibility to the CAP and provide assurance to the public of a valid product. The carbon inventory verification is similar to a conventional financial audit whereby an entity, external to the City, provides an unbiased assessment of the reported information.

IMPLEMENTATION PHASES:

2015-2017	2018-2020	2021-2035
✓	✓	✓

MONITORING & REPORTING

Measure 3: Job Monitoring

LEAD DEPARTMENT: Human Resources

IMPLEMENTING MECHANISMS:

3.1 Annual Jobs Monitoring

As part of the CAP AMR, the City shall track the effect of climate action measures and programs on local employment. To the extent feasible, the AMR will account for the total number, and associated wages, of CAP-inspired jobs, differentiating between new work for existing firms and new job creation. Every attempt will be made to identify the demographic and geographic distribution of CAP-inspired jobs. The City of San Diego shall follow the methodology for employment data collection used by the Bureau of Labor Statistics (BLS) green jobs initiative. The City shall collect data from the Quarterly Census of Employment and Wages and Occupational Employment Statistics programs. In addition, the City will reach out to local green job employers and workforce development organizations to verify, and add validity, to BLS data.

IMPLEMENTATION PHASES:

2015-2017	2018-2020	2021-2035
✓	✓	✓



City of San Diego Wastewater Treatment Plant

ADAPTATION



Mission Valley Center - Trolley Bridge

Why should San Diego adapt now?

Some form of climate change will occur regardless of the City's effort to reduce and mitigate GHG emissions. As a result, the City will need to adapt to these changes within the context of the community's environmental and socioeconomic system. According to the Intergovernmental Panel on Climate Change (IPCC), climate adaptation refers to the "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC 2007).

While emissions reductions within the City are a critical part of the CAP, global greenhouse gas emissions are still rising and a significant level of climate change impact appears to be inevitable for our region and must be addressed. Development of an actionable adaptation plan will allow the City to focus and prioritize its limited resources, take advantage of early action and planning, and engage in effective collaboration with other local, state and federal agencies that are moving forward with similar planning efforts.

The City recognizes that climate adaptation is a core component of its overall response to the impacts of climate change.

The City intends to develop a stand-alone Climate Adaptation Plan that will integrate and build upon the strategies and measures in the CAP.

The integration of the Climate Adaptation Plan and CAP should lead to substantial co-benefits whereby individual measures lead to both mitigation of GHGs and adaptation to the impacts of climate change. The forthcoming Climate Adaptation Plan will prioritize adaptation resources and timing based on a risk vulnerability rating that takes into account both the likelihood of specific impacts occurring and the severity of those impacts on threatened natural resources, human health (especially on vulnerable populations including low-income and seniors), and critical infrastructure.

What is the difference between climate change mitigation and adaptation?

Adaptation efforts seek to reduce vulnerability to projected climate changes and increase the local capacity to adapt (Turner et al., 2003). Adaptation differs from mitigation as adaptation aims to minimize the actual or expected effects of climate change whereas mitigation includes action to reduce the creation of greenhouse gases.

Currently, the City does not have the necessary resources to develop an adequate plan that would fully assess the risks and vulnerabilities, develop adaptation strategies, and prepare the community for looming heat waves, sea-level rise, impacts on infrastructure, etc. However, the City is aggressively pursuing additional funding from state (California Energy Commission), federal sources (Federal Emergency Management Agency), and a potential grant from the Rockefeller Foundation 100 Resilient Cities Centennial Challenge to develop a comprehensive adaptation plan that will meet the needs of the community.

Climate Impacts to San Diego

Research from state, regional, and local agencies indicate that the City of San Diego faces serious vulnerabilities from climate change impacts. One such study, commissioned by the San Diego Foundation, titled "San Diego's Changing Climate: A Regional Wake-up Call," was the first of its kind to identify impacts specific to the City of San Diego (San Diego Foundation 2007).



The potential impacts include, but are not limited to:

- **Increased temperatures**

The City will see hotter and drier days and more frequent, prolonged heat waves.

- **Deteriorating public health**

Hotter and drier days create more air pollution by raising ozone levels and this can exacerbate asthma and other respiratory and cardiovascular diseases.

- **Introduction of new public health issues**

Warmer temperatures year-round could lead to growing mosquito populations, increasing the regional occurrence of West Nile virus and potentially introducing tropical diseases such as Malaria and Dengue Fever.

- **Reductions in fresh water**

Water and energy demand will increase while extended and more frequent droughts will cause the water supply to diminish.

- **Increased rate of wildfires**

Drier weather may increase the frequency and size of wildfires.

- **Rising sea levels**

Projected sea level rise, coastal erosion, and increasing storm surges may cause fragile sea cliffs to collapse, shrink beaches, and destroy coastal property and ecosystems.

- **Negative impacts on wildlife**

Native plants and species may be lost forever as entire ecosystems are challenged.

California Adaptation Efforts

More than six years have passed since publication of the San Diego Foundation's ground-breaking report. It has been almost ten years since approval of the CPAP. Over that period, the risks poised by climate change's impacts have not diminished. And, while at first appearance, the City seems to be at just the start in terms of climate adaptation planning, the opposite is actually true.

State, regional, and other private entities also recognized the seriousness of the situation and have taken proactive steps to address climate change issues. Several efforts have been, or are, well underway including detailed vulnerability assessments, risk assessments, adaptation policies, and adaptation policy guides for local governments. The City of San Diego will benefit from these resources as it develops its own climate adaptation strategy. Past and current efforts, from which the City can draw, include:

Executive Order S-13-08 – Signed in 2008, the executive order required the preparation of a "California Sea Level Rise Assessment Report" (published in 2009) and requires that state agencies planning construction projects in areas vulnerable to sea level rise consider and address a range of scenarios for 2050 and 2100 coastal inundation.

The California Climate Change Center published "Preparing for the Impacts of Climate Change in California: Opportunities and Constraints for Adaptation." In response to Executive Order S-3-05, this paper examines California's opportunities and constraints for managing the impacts of climate change and provides recommendations for how government, research, and civil society can help California most effectively prepare for climate change impacts.

California Climate Adaptation Strategy, adopted in 2009, summarizes climate change impacts and recommends adaptation strategies across seven sectors: Public Health, Biodiversity, Coastal Resources, Water, Agriculture, Forestry, and Transportation and Energy (State of California 2009).

Additionally, **the California Climate Adaptation Strategy** included The Adaptation Planning Guide (Guide). The Guide, updated in 2012, provides a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused by climate change (State of California 2012).

The California Natural Resources Agency and the California Energy Commission released **Cal-Adapt**, a web-based tool that enables city and county planners, government agencies, and the public to identify potential climate change risks in specific areas throughout California.

ICLEI – Released in 2012, the "Sea Level Rise Adaptation Strategy for San Diego Bay" report provided the nation's first comprehensive vulnerability assessments and recommendations to build resiliency for communitywide infrastructure in San Diego.

San Diego County Water Authority published the 2010 Urban Water Management Plan, a long-term planning strategy to ensure a reliable water supply for the region. The Plan deals with adapting to potential supply and demand impacts due to climate change (SDCWA 2010).



Local Vulnerabilities

The City's General Plan (2008) and Community Plans (multiple years) have important roles in the adaptation planning process. The General Plan lays out the policy framework for addressing climate change and the Community Plans have the purview to make site-specific land use and design recommendations. These recommendations, along with implementing ordinances, can help reduce the impacts from a changing climate.

Examples of planning-related adaptation strategies include:

- Designating land for a full range of uses, including open spaces and high-density areas where appropriate.
- Designing a multi-modal mobility system with multiple emergency routes.
- Fostering urban agriculture to increase food system security.
- Implementing tree-planting incentives, ordinances, and programs to save energy, sequester carbon, and reduce the urban heat island effect.
- Requiring appropriate setbacks from the coast in areas subject to sea level rise.
- Requiring developers to incorporate natural drainage basins and water features to capture storm water in areas vulnerable to increased flood risk.
- Implementing brush management programs to reduce wildfire risk in fire-prone areas.
- Increasing conservation and efficiency in water use to reduce reliance on imported water.
- Coordinating with urban farmers and the regional San Diego County Farm Bureau to promote alternative irrigation measures or other protective recommendations.

Land use planning alone will not fully mitigate all of the impacts of climate change.

Specific sectors will require focused solutions. The following section illustrates vulnerabilities for consideration for inclusion in a City of San Diego Climate Adaptation Plan.

Protect Public Health

Understanding how climate change impacts may affect human health and developing responsive solutions to mitigation and protect vulnerable populations is essential. For example:

- Diminished air quality from wildfires or excessive ozone can be dangerous for asthma sufferers.
- Hotter temperatures can cause heat stress and is potentially fatal for vulnerable populations such as the elderly, the young, and outdoor-workers.
- Flooding or coastal inundation events could cause injury or death.

Protect Water Supply

Adequate water supply is a fundamental requirement for every community. Like many other California cities, San Diego is challenged by an ever-increasing demand for water coupled with a projected decline in supply. By 2035 the San Diego County Water Authority projects an increase in total normal

water demand of 20 percent (including future conservation, demand associated with projected near-term annexations, and accelerated forecasted growth) from the average demand that occurred over the period 2005-2010 (SDCWA 2010). Currently, 85 to 90 percent of the City of San Diego's water supply is met by imported water (City of San Diego 2013).

Protect Municipal Infrastructure and Services

The public infrastructure and services (e.g., police, fire services, and sewer systems) form the structural and functional backbone of the City. A breakdown can cause a range of cascading consequences for residents, businesses, and tourists. It is important to identify where the risks are greatest and which critical assets are most vulnerable. This will aid in prioritizing assets and actions to maintain service resilience.

Protect Environmental Health

Healthy natural water systems, vegetation areas, wetlands, estuaries and the associated biome are important assets to the region. In San Diego, a healthy environment also increases the quality of life for residents and workers, and attracts tourists. Beyond the detrimental impacts on natural plant and wildlife communities, the decline in environmental health would have negative social and economic effects. Balancing the needs of the natural environment with those of the community has always been a challenge, and climate change will put more pressure on the competing systems.

Protect Open Space, Parks and Recreation

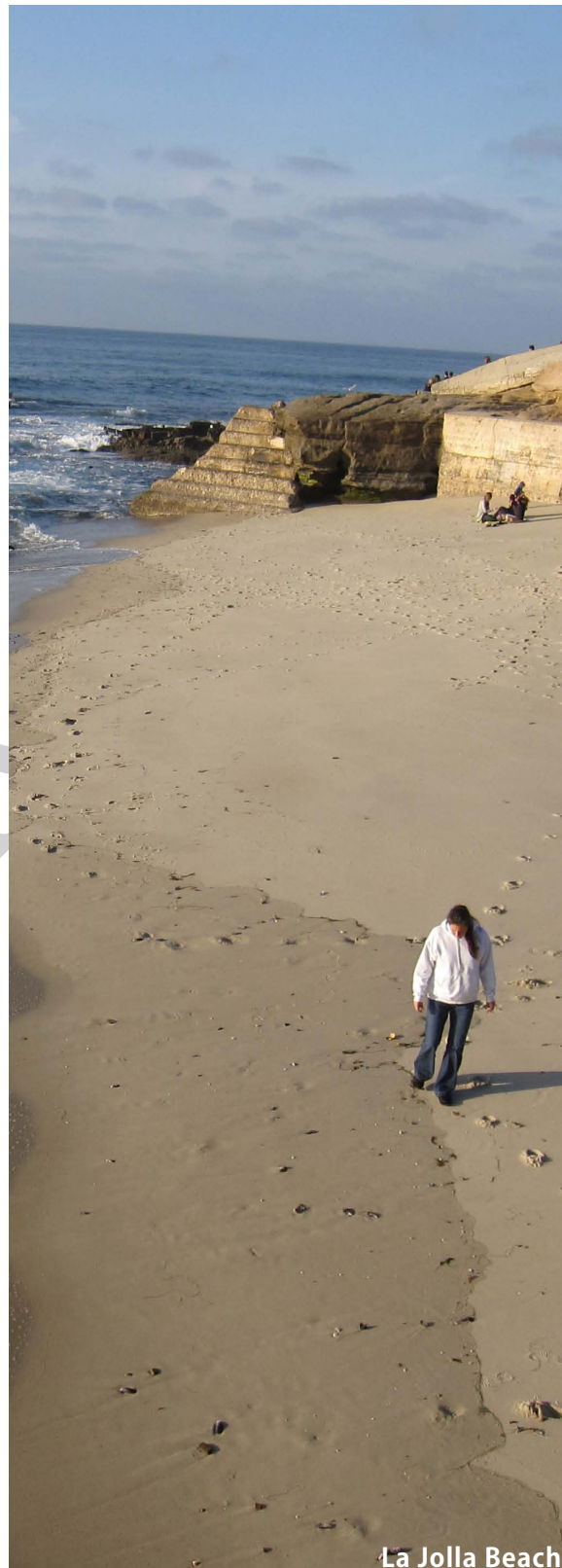
Parks and open space are important resources that contribute to San Diego's culture, character, and economy. Green spaces offer recreational and tourism opportunities. They also serve as a climate change adaptation resource where they can alleviate the heat island effect and potentially reduce the impact of flooding.

Coastal Management and Protection

Numerous studies focusing on sea level rise as a result of climate change have been released, including Local Governments for Sustainability (ICLEI) in 2012 titled "Sea Level Rise Adaptation Strategy for San Diego Bay." The consensus from these studies is that, without substantial reductions in greenhouse gas emissions, global temperature increases will lead to a rise in sea levels that will inundate San Diego with water from the Pacific Ocean.

Cost-Benefit

Climate adaptation will not be inexpensive. It is a case where the cost will come before the benefits. There will always be competing demands for limited public and private funds. Therefore, it is absolutely necessary for public decision-makers to consider the possible risks and implementation costs from a holistic perspective, including the environmental and social impacts. For example, while an adaptation strategy may provide mitigation or protection to one part of the community, the costs may be unequally distributed leading to economic hardship for disadvantaged populations.



La Jolla Beach



www.SDClimateMAP.org