EMISSIONS REDUCTION ACTION PLAN

City of Rancho Palos Verdes

SOUTH BAY CITIES
COUNCIL OF GOVERNMENTS

South Bay Cities 2017

The City of Rancho Palos Verdes would like to thank the South Bay Cities Council of Governments and its staff for their contribution to the research, writing and production of our City's Emissions Reduction Action Plan. Funding was generously provided by a grant through the Strategic Growth Council and Los Angeles County Metropolitan Transportation Authority. Additional funding for the Energy Efficiency Chapter was provided by Southern California Edison and The Gas Company

City of Rancho Palos Verdes
November 2017

EMISSIONS REDUCTION ACTION PLAN

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Metro

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

SoCalGas
A Sempra Energy utility

Emissions Reduction Action Planning efforts vary in scope, size and focus. One common aim of this work is to establish greenhouse gas inventories and future forecasts. Another major component is developing the framework for selecting, evaluating, and organizing strategies that help advance local GHG emissions reduction goals. For example, individual agencies may implement policies, optional or mandatory, related to land use development that operate outside the CEQA process. Within the CEQA process, a qualified ERAP framework offers the ability to streamline future CEQA greenhouse gas analyses by being able to tier off the Emissions Reduction Action Plan. Depending on local factors, such as anticipated levels of development, a qualified ERAP is not necessary and agencies would continue to utilize the framework for informing the selection and evaluation of emissions reduction strategies within the local context. The South Bay Cities Council of Governments framework is unqualified, and offers cities a planning tool with optional strategies. The analysis and optional strategies can be used in the future, by way of example, to help create a Qualified Emissions Reduction Strategy under CEQA, to create GHG thresholds to be used in CEQA analysis and can be used to update the City's General Plan.

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Introduction

The City of Rancho Palos Verdes is committed to providing a more livable, equitable, and economically vibrant community and sub-region.

As a part of these efforts, the City of Rancho Palos Verdes, in cooperation with the South Bay Cities Council of Governments, has developed a Emissions Reductions Action Plan (ERAP) to reduce Greenhouse Gas (GHG) emissions within the city. The City's ERAP serves as a guide for action by setting GHG emissions reduction goals and establishing strategies and policy to achieve desired outcomes over the next 20 years.

Purpose and Need for the Emissions Reduction Action Plan

Jurisdictions in California are proactively working to find innovative solutions to reduce emissions. Many communities have taken local control of the issue by developing plans or strategies that will lower GHG emissions across various sectors in a manner that is most feasible for their community. The City of Rancho Palos Verdes' ERAP is a valuable tool in this effort. It identifies community-wide strategies to lower GHG emissions from a range of sources within the jurisdiction, including transportation, land use, energy generation and consumption, water, and waste. Development and adoption of this ERAP allows the City of Rancho Palos Verdes to:

- Understand the community GHG emissions that it now produces
- Identify strategies at the local level that will result in GHG emissions reductions
- Develop a plan to implement strategies
- Monitor and report progress toward climate change goals

For the purpose of:

- Enhancing the community and neighborhoods to help ensure a safe, healthy, and sustainable environment
- Promoting and encouraging the adoption and growth of zero emission vehicles
- Advancing strategies for housing and buildings that reduce energy and water usage
- Promoting behavior change that reduces waste
- Advancing strategies to encourage and support the market for renewable energy and storage

Alignment with California's Climate Change Action Plan

Since the 1990s, the State of California has adopted a number of policies to address Climate Change, with legislation such as Assembly Bill 32 (AB 32), Senate Bill 32 (SB 32), and the 2017 Climate Change Scoping Plan Update. All of these documents set ambitious targets for reductions in greenhouse gas emissions within the State with the most recent being a 40 percent reduction in GHG by 2030 compared to 1990 levels. Apart from setting targets, the State has also passed a variety of legislation over the past 20 years to encourage the development of renewable energy sources, apply financial disincentives for carbon emissions from business and industry, reduce energy and water usage, increase building energy efficiency, and reduce emissions from waste and mobile sources such as fossil-fuel based transportation. The ERAP advances these goals and streamlines City efforts to deploy specific initiatives and programs that target the reduction of GHG emissions, while integrating these efforts with the other priorities such as economic development, regional mobility and connectivity, and improving the local air and water quality.

Table 1 summarizes the key policies and legislation to address Climate Change adopted by the State of California.

Table 1: Regulatory Setting

Bill & Year of Issuance	Title	Description	Implementing Agency
Public Law (PL) 88-206 (1963)	Clean Air Act	Federal policy to address global climate change through monitoring, reporting, and regulation of GHG emissions.	USEPA
AB 1493 (2002)	Pavley I and II	GHG emissions must be reduced from passenger vehicles, light-duty trucks, and other non-commercial vehicles for personal transportation.	California Air Resources Board (CARB)
Executive Order S-20-04 (2004)	California Green Building Initiative	Reduce energy use in state-owned buildings 20% from a 2003 baseline by 2015.	California Energy Commission (CEC)
Executive Order S-3-05 (2005)	Greenhouse Gas Initiative	Set statewide GHG emissions targets to 2000 levels by 2010; 1990 levels by 2020; and 80% below 1990 levels by 2050.	CARB
Assembly Bill (AB) 32 (2006)	Global Warming Solutions Act	State must reduce GHG emissions to 1990 levels by 2020.	CARB
SB 1368 (2006)	Emission Performance Standards	Requires the California Public Utilities Commission (CPUC) to establish a performance standard for base-load generation of GHG emissions by investor owned utilities.	CEC
Senate Bill (SB) 1078 (2006), 107 (2017), and X1-2 (2011), and Executive Order S-14-08 (2008) and S-21-09 (2011)	Renewable Portfolio Standard	California investor-owned utilities must provide at least 33% of their electricity from renewable resources by 2020.	California Public Utilities Commission
Assembly Bill 118 (Nunez, Chapter 750, 2007) (2007)	Alternative Fuels and Vehicles Technologies	The bill would create the Alternative and Renewable Fuel and Vehicle Technology Program, to be administered by the Energy Commission, to provide funding to public projects to develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies.	CEC
Executive Order S-1-07 (2007)	Low Carbon Fuel Standard	The carbon intensity of transportation fuels in California must be lowered 10% by 2020.	CARB
AB 811 (2008)	Contractual Assessments: Energy Efficiency Improvements	Provides financing to allow property owners to finance renewable energy generation and energy efficiency improvements.	California cities and counties
Senate Bill 375 (Steinberg, Chapter 728, 2008) (2008)	Sustainable Communities + Climate Protection Act	Requires Air Resources Board to develop regional greenhouse gas emission reduction targets for passenger vehicles. ARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations. MPOS to develop and incorporate a sustainable communities strategy which will be the land use allocation in the RTP.	Regional Planning Agencies
AB 474 (2009)	Contractual Assessments: Water Efficiency Improvements	Designed to facilitate the installation of permanent water conservation and efficiency improvements on private property through a voluntary financing program between public entities and property owners.	California cities and counties
SB X7-7 (2009)	Statewide Water Conservation	The carbon intensity of transportation fuels in California must be lowered 10% by 2020.	Department of Water Resources
AB 1092 (Levine Chapter 410, 2013) (2013)	Building Standards: Electric Vehicle Charging Infrastructure	Requires the Building Standards Commission to adopt mandatory building standards for the installation of future electric vehicle charging infrastructure for parking spaces in multifamily dwellings and nonresidential development.	California Building Standards Commission (CBSC)
California Code of Regulations (CCR) Title 24 (2016)	2013 Building Efficiency Standards	Statewide green building code that raises the minimum environmental standards for construction of new buildings in California.	CEC
Senate Bill 32 (Chapter 249) (2016)	Global Warming Solutions Act: Emissions Limit	The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective greenhouse gas emissions reductions. This bill would require the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.	CARB

Roles and Responsibilities: Regional Agencies and Local Governments

Regional Agencies

The State has acknowledged that local governments play an important role in helping California achieve its long-term GHG reduction goals. In Los Angeles County, the Southern California Association of Governments (SCAG), Los Angeles County Metropolitan Transportation Authority (Metro), South Coast Air Quality Management District (SCAQMD), and cities all have sole or partial jurisdiction over a wide range of factors that affect GHG emissions. Councils of Governments can also help local governments identify funding and implement projects that reduce GHG emissions.

SCAG working with Metro developed the 2012–2035 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS) for the six-county region of Los Angeles, Orange, Riverside, San Bernardino, Imperial, and Ventura counties. SCAG's efforts focus on developing regional strategies to minimize traffic congestion, promote environmental quality, and provide adequate housing. SCAG and SCAQMD developed the South Coast Air Quality Management Plan (AQMP) which is a comprehensive program designed to bring the South Coast Air Basin into compliance with all federal and State air quality standards. The AQMP places substantial emphasis on reducing motor vehicle miles traveled.

South Bay Cities Council of Governments

This Emissions Reduction Action Plan is developed through the South Bay Cities Council of Governments (SBCCOG), which received funding from SCE's 2013-2014 Local Government Partnership Strategic Plan Pilots program and the Strategic Growth Council. The SBCCOG is a Joint Powers Authority of 16 cities and contiguous unincorporated areas of the County of Los Angeles. SBCCOG member cities include Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance, and the Harbor City/San Pedro communities of the City of Los Angeles, along with the County of Los Angeles District 2 and 4 unincorporated areas.

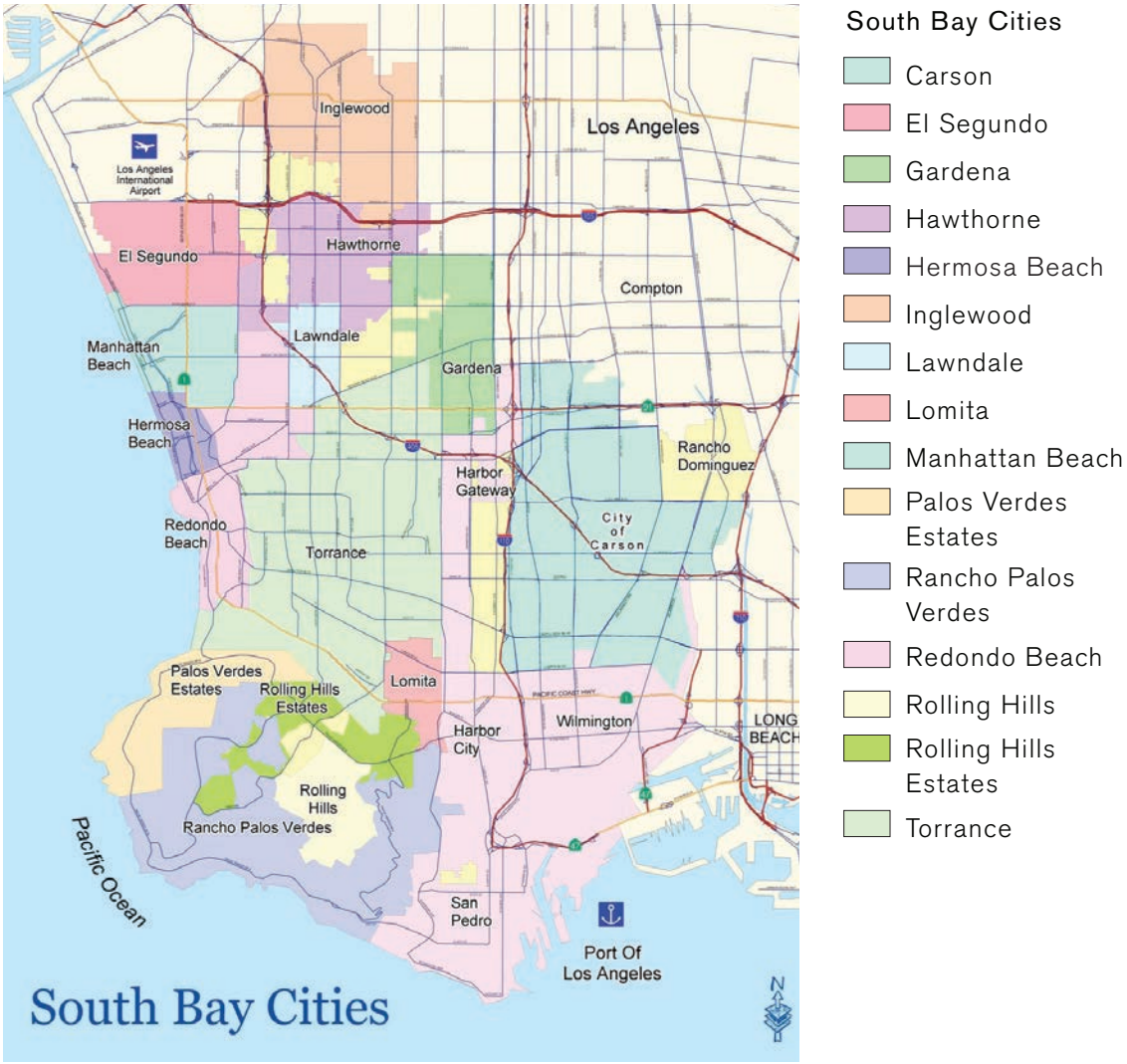


Figure 1: South Bay Member Cities; source - South Bay Association of Realtors

The SBCCOG has demonstrated its commitment to increasing environmental quality and awareness among its residents, local businesses, and jurisdictions while maintaining economic prosperity through effective sub-regional coordination. The effort also helps the SBCCOG meet the first goal of its Strategic Plan for Environment, Transportation and Economic Development: to facilitate, implement and/or educate members and others about environmental, transportation and economic development programs that benefit the South Bay.

SBCCOG has assisted the South Bay sub-region in related programs and policies, including many of the resources identified later in this Emissions Reduction Action Plan (ERAP). The SBCCOG assisted the 15 participating cities (excluding Los Angeles) to develop individual ERAPs, resulting in a cost-effective process for the cities, as well as sub-regional coordination among the partner cities related to climate change goals. In addition, the SBCCOG developed a sub-regional plan that identifies the cumulative efforts and larger strategies for the South Bay and identifies synergies that may compound the success of each city's efforts by coordinating implementation of shared strategies and positioning the sub-region for unique funding opportunities.

City Profile

Figure 2: Rancho Palos Verdes City Map; Source - Google maps imagery with overlay

The City of Rancho Palos Verdes is a community of approximately 42,000 residents and has over 15,500 households. The City's population is about 54 percent White, 30 percent Asian, 9 percent Hispanic, 3 percent African American, and 4 percent other races/ethnicities.

	2005	2007	2010	2012	% Change 2005-2012
Population	42,457	41,728	41,654	41,897	-1.3%
Households	15,417	15,480	15,561	15,599	1.2%
Jobs	6,191	6,575	6,132	6,298	1.7%
Service Population (Population + Jobs)	48,648	48,303	47,786	48,195	-0.9%

Table 2: Demographic Data corresponds to GHG inventory years and reflects estimates based on the following sources: 1) U.S. Census Bureau American Community Survey and 2) California Department of Finance

GHG Emissions Overview

Inventories

The first step towards reducing GHG emissions is estimating the baseline and future expected emissions. These estimates are categorized by sources – commercial and residential energy, on-road transportation, solid waste, water, wastewater, and off-road sources. The City has completed inventories for 2005, 2007, 2010, and 2012. The baseline year is 2005, which means that the future emissions reductions will be measured against emissions that occurred in 2005. A complete report of the City's GHG inventory can be found in Appendix A - "Energy Efficiency CAP" including Methodology, Inventory & Forecast (inventory and forecast is listed in the "Energy Efficiency CAP Appendix A").

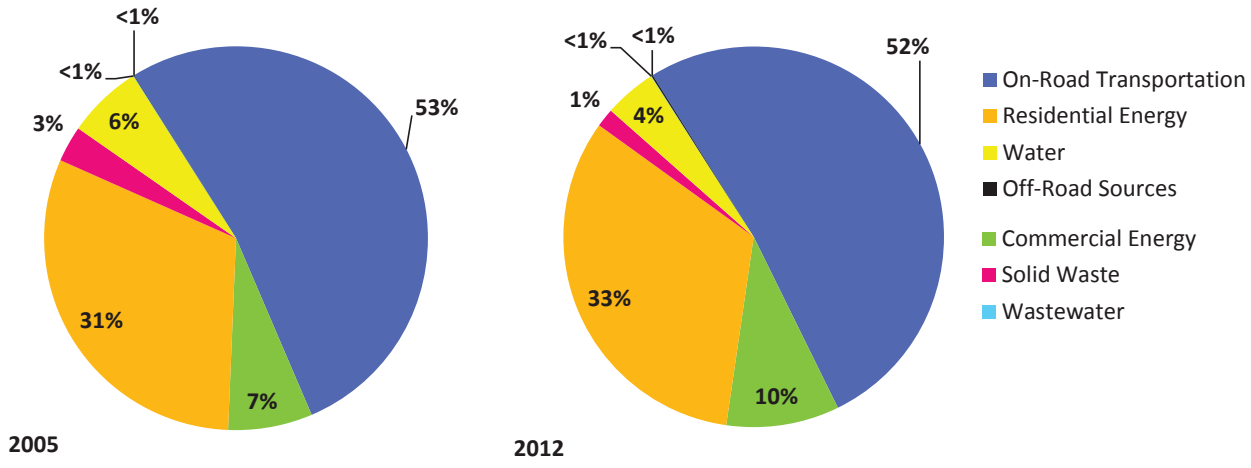


Figure 3: Community-Wide GHG Emissions by Sector from 2005 and 2012; Source - Appendix A

Sector	2005 (MT CO_2e)	2012 (MT CO_2e)	% Change 2005 to 2012
On-Road Transportation	150,564	136,175	-9.6%
Residential Energy	88,941	86,129	-3.2%
Commercial Energy	20,377	25,304	24.2%
Water	18,156	11,653	-35.8%
Solid Waste	8,674	4,158	-52.1%
Off-road Sources	157	340	116.7%
Wastewater	156	117	-25.0%
Total	287,025	263,876	-8.1%

Table 3: Community-Wide GHG Emissions by Sector from 2005 and 2012; Source - Appendix A

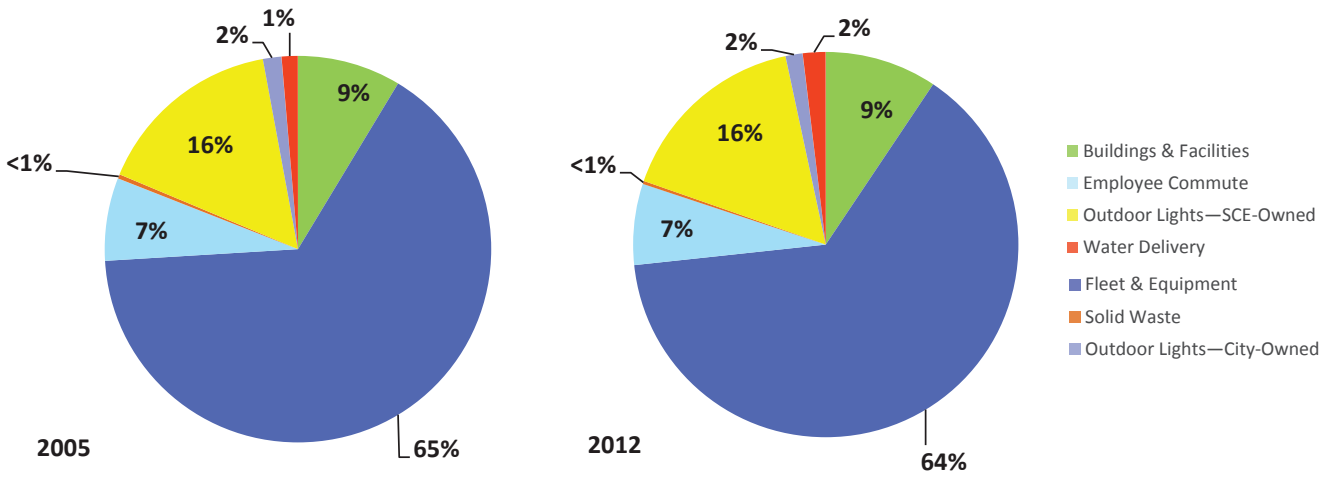


Figure 4: Municipal GHG Emissions by Sector from 2005 and 2012; Source - Appendix A

Sector	2005 (MT CO_2e)	2012 (MT CO_2e)	% Change 2005 to 2012
Fleet & Equipment	1,480	1,464	-1%
Outdoor Lights—SCE-owned	357	373	4%
Buildings & Facilities	196	215	10%
Employee Commute	157	156	-1%
Outdoor Lights—City-owned	35	33	-6%
Water Delivery	31	44	42%
Solid Waste	8	6	-25%
Total	2,264	2,291	1.2%

Table 4: Municipal GHG Emissions by Sector from 2005 and 2012; Source - Appendix A

Forecasts and Target Setting

Emission estimates for future years are scenarios based on assumptions about the future. The 2020 Business As Usual (2020 BAU) scenario assumes that no new policies, plans, programs, or regulations designed to reduce GHG emissions will be adopted or implemented before 2020. This scenario would be the "worst case". The 2020 and 2035 Adjusted Business As Usual (ABAU) scenarios, in comparison, do take into account the expected reduction impacts resulting from federal and state mandated laws such as higher vehicle fuel efficiency standards and increases in the percentage of renewable energy production.

In 2015, the City set GHG emission reduction goals consistent with the State's AB 32 GHG emission reduction targets. The City's target was calculated as a 15 percent decrease from 2005 levels by 2020 as recommended in the State AB 32 Scoping Plan. A longer-term goal was established for 2035 to reduce emissions by 49% below 2005 levels. These goals put the City on a path towards helping the State meet its long-term 2050 goal to reduce emissions by 80% below 1990 levels. (Tables 5&6)

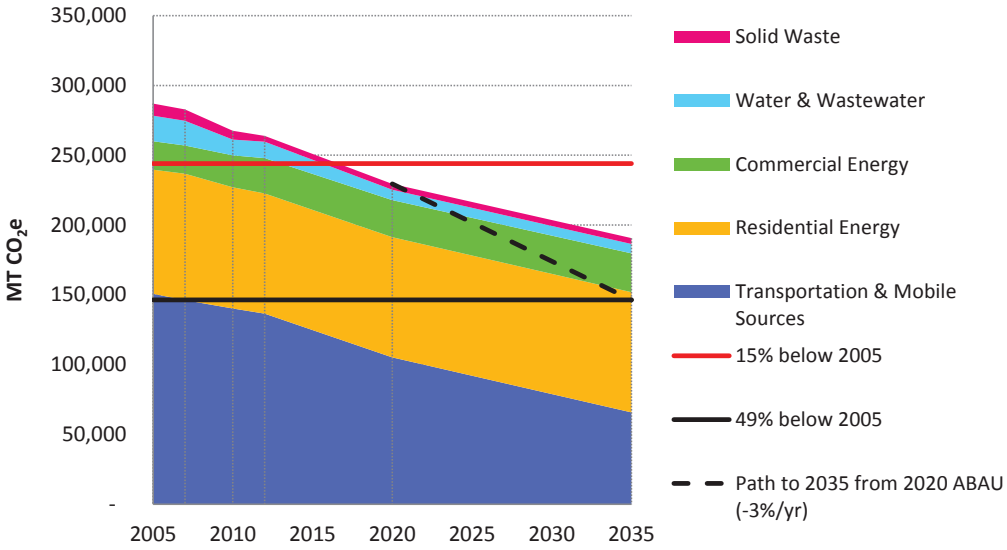


Figure 5: Community Emissions Inventories, Projections and Targets; Source- Appendix A

Sector	2005	2012	2020	2035
BAU Emissions (MT CO_2e)	287,025	263,876	260,072	259,792
Adjusted BAU Emissions (MT CO_2e)	287,025	263,876	229,481	190,653
State-Aligned Target (% change from 2005)			-15%	-49%
State-Aligned Target (% change from 2012)			-8%	-45%
State-Aligned Emissions Goal (MT CO_2e)			243,971	146,383
Reductions from Adjusted BAU needed to meet the Target (MT CO_2e)			Target Met	44,270

Table 5: State-Aligned Community GHG Reduction Targets; Source- Appendix A

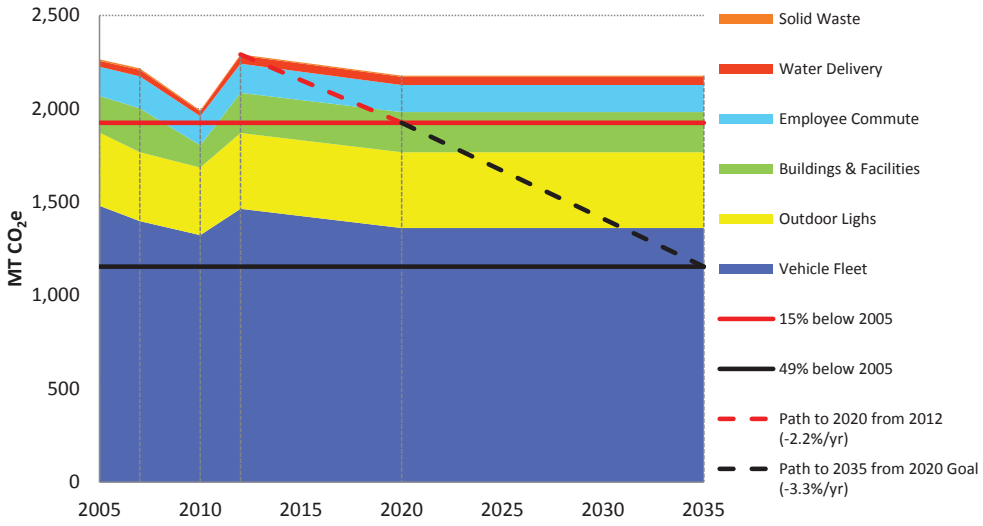


Figure 6: Municipal Emissions Inventories, Projections and Targets; Source- Appendix A

	2005	2012	2020	2035
BAU Emissions (MT CO_2e)	2,264	2,291	2,291	2,291
Adjusted BAU Emissions (MT CO_2e)	2,264	2,291	2,177	2,177
State-Aligned Target (% change from 2005)			-15%	-49%
State-Aligned Target (% change from 2012)			-16%	-50%
State-Aligned Emissions Goal (MT CO_2e)			1,924	1,155
Reductions from Adjusted BAU needed to meet the Target (MT CO_2e)			253	1,022

Table 6: State-Aligned Municipal GHG Reduction Targets; Source- Appendix A

Selected Strategies

Land Use and Transportation

Facilitate pedestrian and neighborhood development and identify ways to reduce automobile emissions including supporting zero emission vehicle infrastructure, improving pedestrian and bicycle infrastructure, enhancing public transit service, and supporting reductions in single-occupancy vehicle use.

Energy Efficiency (EE)

Emphasize energy efficiency retrofits for existing buildings, energy performance requirements for new construction, water efficient landscaping, financing programs that will allow home and business owners to obtain low-interest loans for implementing energy efficiency in their buildings

Solid Waste

Focus on increasing waste diversion and encouraging participation in recycling and composting throughout the community.

Urban Greening

Contain measures that create “carbon sinks” as they store GHG emissions that are otherwise emitted into the atmosphere as well as support health of the community.

Energy Generation/Storage

Demonstrate the City’s commitment to support the implementation of clean, renewable energy while decreasing dependence on traditional, GHG emitting power sources.

Existing Sustainability Efforts

The City of Rancho Palos Verdes has a number of policies, plans, and programs that demonstrate its ongoing commitment to sustainability, energy efficiency, and GHG emissions reductions.

Land Use Strategies

General Plan Policies

The existing General Plan was adopted on June 26, 1975, which included a Natural Environment Element, Socio-cultural Element, Urban Environment Element, Land Use Plan, and Fiscal Element. The Natural Environment Element, in particular, considered the climate and air quality of the region at that time as ideal.

Energy Efficiency Strategies

Energy Leadership Partnership

Rancho Palos Verdes is a Gold member of the SCE's Energy Leader Partnership (ELP) program based on their energy efficiency accomplishments to date. The ELP program is a framework that offers enhanced rebates and incentives to cities that achieve measurable energy savings, reduce peak-time electricity demand and plan for energy efficiency. The program has a tiered incentive structure with threshold criteria required to trigger advancement to the next level of participation.

Property Assessed Clean Energy Financing

Property Assessed Clean Energy (PACE) is a mechanism to finance energy efficiency, renewable energy, and water conservation upgrades to residential and commercial facilities. Financing is repaid as a special assessment on their property tax, allowing the home- or business owner to finance improvement projects that will result in GHG reductions without needing up-front capital.

The City has joined the Home Energy Renovation Opportunity (HERO), which is a PACE program for residential upgrades, administered by the Western Riverside Council of Governments. Products eligible under the HERO program include lighting upgrades, building insulation improvements, water efficiency enhancement, renewable energy production, water heating technologies, and mechanical system upgrades.

In addition, the City of has adopted a resolution to participate in Los Angeles PACE. This financing option is available to Los Angeles County commercial, industrial and multi-family property owners to fund on-site energy efficiency, renewable energy and water-saving improvements. Under the program, the County issues a bond to a lender, which secures funding for the construction of the energy upgrade. Property owners then repay financing twice a year through an assessment on their property tax bill.

Beacon Award Program

The Beacon Award program is sponsored by the Institute for Local Government and the Statewide Energy Efficiency Collaborative (SEEC). The Beacon Award recognizes California cities and counties that have achieved measurable reductions in GHG emissions and energy savings, adopted policies and programs to address climate change, and promote sustainability. City Council adopted the program to become a Beacon Award Proud Participant, and continues to work towards achieving the Silver, Gold, and Platinum Beacon Award levels.

Other

The City of Rancho Palos Verdes provides electronic brochures on Energy Upgrade California, which is statewide energy management initiative designed to help residents and small businesses learn the best ways to take action on energy to save money and be more comfortable at home and at work. Additionally, the City of Rancho Palos Verdes provides a Residential Energy Inspection Checklist for Newly Constructed Buildings and Additions, which was most recently updated in 2008.

Rancho Palos Verdes' website offers a variety of educational training programs, workshops, rebate opportunities, and construction improvement incentives to small businesses, through its community and regional partners, including the South Bay Environmental Services Center. The City has also created a listserve to notify subscribers via email of available incentives.

Emissions Reduction Action Plan Categories & Measures

The City's ERAP, facilitated by the SBCCOG, includes five broad categories - Land Use and Transportation, Energy Efficiency, Energy Generation & Storage, Solid Waste, and Urban Greening. As part of the efforts under each category, the SBCCOG, working with consultants, identified a broad menu of feasible strategies for the South Bay sub-region. The menu was then presented to the City to select specific measures to consider for implementation. Based on these selections, estimated reductions in GHG emissions for each category were calculated and compared to the City's adopted target (Figure 7a).

As depicted in the Figure 7a, the five categories included in the ERAP have the potential to reduce approximately 19,349.61 MT CO2e/yr emissions and accomplish the City's reduction targets of 15% below 2005 by 2020 and 49% below 2005 by 2035.

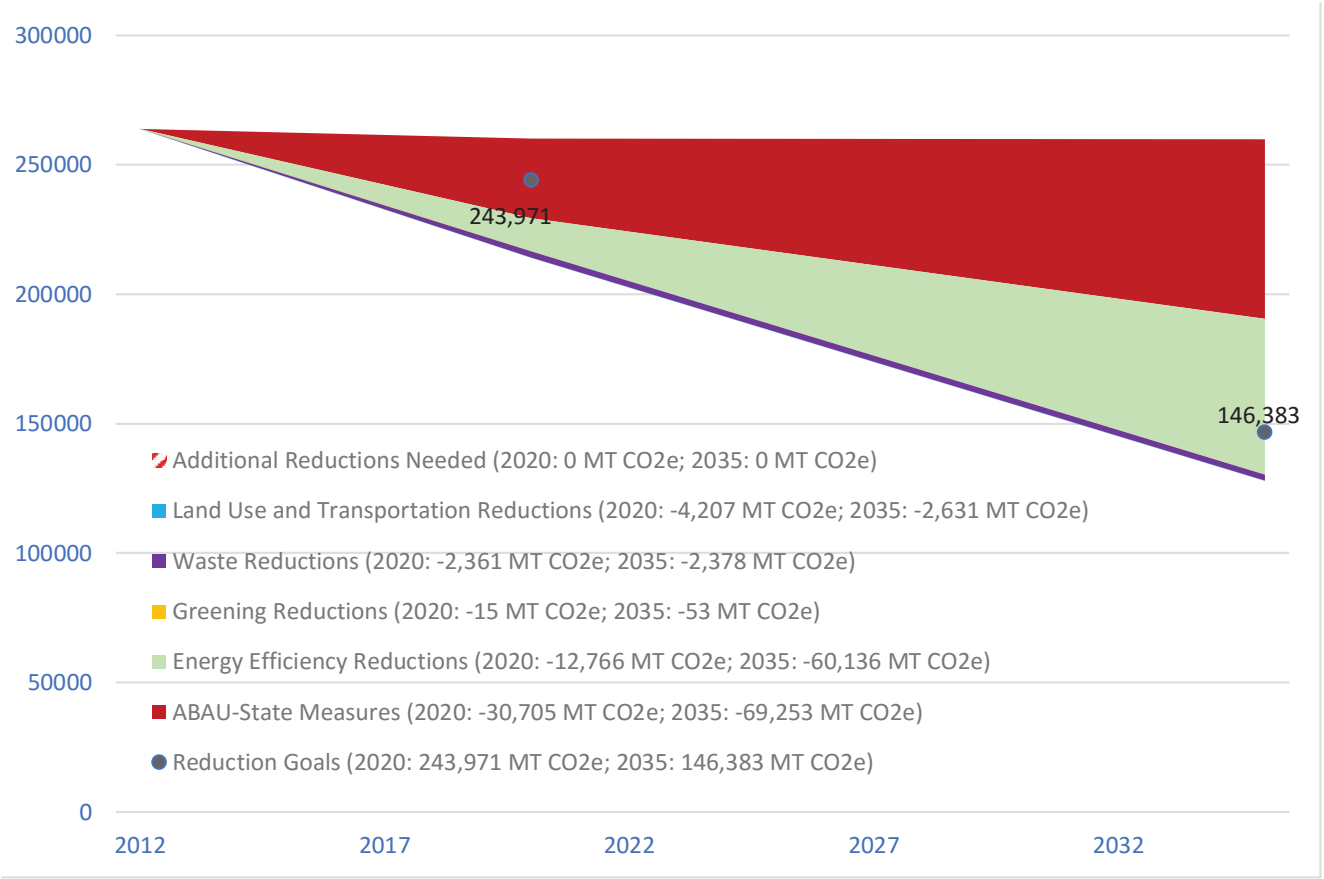


Figure 7a: City of Rancho Palos Verdes State and Local GHG Reductions Comparison with Targets 2012-2035 (the baseline year is 2005, the chart is a snapshot of the emissions from 2012 to 2035)

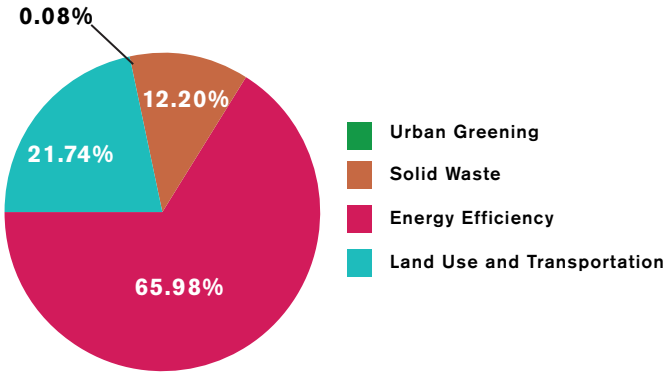
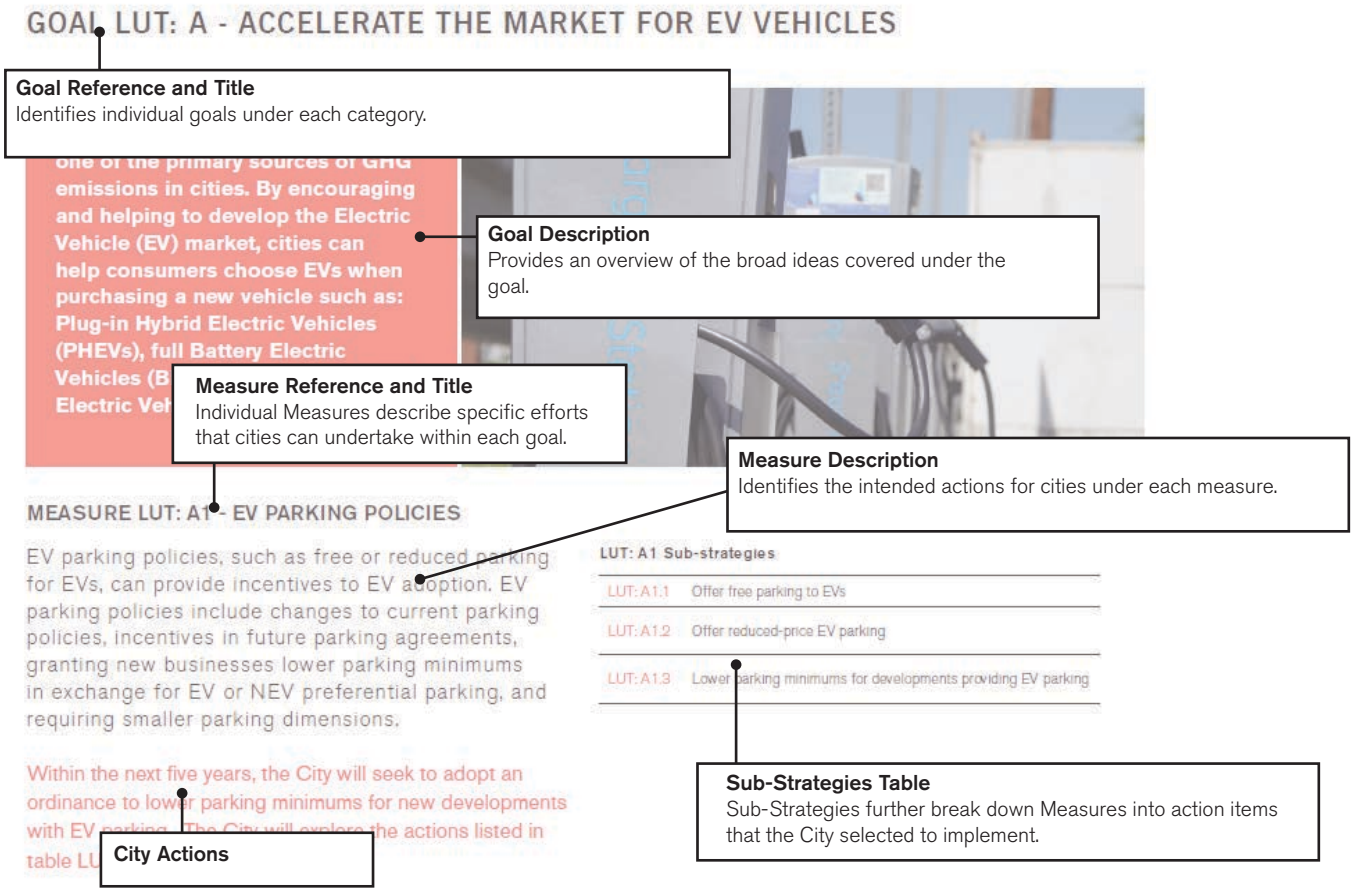


Figure 7b: Rancho Palos Verdes 2020 GHG Emission Reduction Potential by Source

The following chapters summarize the measures selected by the City of Rancho Palos Verdes under each of the categories (Figure 7b, please note that the Energy Generation & Storage is not represented as emission reductions were not quantified). Measures are grouped together under larger goals with accompanying descriptions and associated sub-strategies as applicable. The additional economic, social and environmental benefits that can be realized with the measures are listed as co-benefits.

How to Read the Document



Co-Benefits

Co-benefits are listed at the beginning of each chapter and describe the additional community benefits from implementing the reduction strategies. The City has identified eight areas where gains may be accrued beyond reductions in GHG emissions. For instance, increasing the usage of zero emission vehicles also result in better air quality as well as improved public health.

- Adaptation Strategy Support
- Air Quality
- Economy + Jobs
- Energy Conservation
- Public Health
- Resource Conservation
- Safer Streets
- Transportation System Improvement

South Bay LUT Strategies

As part of the ERAP effort, the SBCCOG has developed a unique suite of LUT strategies for the reduction of GHG emissions in the South Bay sub-region. The LUT measures referenced in this plan as selected by the City of Rancho Palos Verdes are strategies developed from two primary sources:

California Air Pollution Control Officers Association – CAPCOA	Sustainable South Bay Strategies - SSBS
• Traditional ERAP resource to assess emission reductions from GHG mitigation measures	• South Bay specific resource to assess emission reductions from local GHG mitigation measures
• Published in August 2010	• Developed over 12 years of extensive field research on mobility, zero emission vehicles and destinations.
• Developed by experts in the field with best available data at the time	• Strategies focus around Neighborhood Oriented Development
• Strategies focus around traditional land use strategies	

Table 7: LUT Strategy Sources

Sustainable South Bay Strategy (SSBS)

The SSBS is different from traditional LUT measures in that it does not focus on strategies that rely primarily on transit. The SSBS complements the South Bay area because the sub-region is housing dense and transit poor. The SSBS strategies:

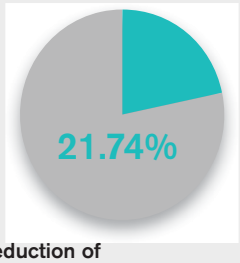
- Facilitate a variety of multi-modal mobility measures; especially walking, cycling, slow speed zero emission vehicles (ZEV) & a slow speed road network that would extend throughout the South Bay.
- Deploy every means possible to shorten trip length or eliminate trips altogether including: fostering the development of especially dense, functionally robust neighborhood centers; providing virtual presence of many destinations; implementing an aggressive sub-regional telework program and a robust fiber network.
- Transition under-performing strip commercial to housing with some strip commercial moving to a neighborhood center.

The complete SSBS report can be found in Appendix B - Sustainable South Bay Strategies.

Land Use and Transportation (LUT)

2020 GHG Reduction Potential

Community Land Use and Transportation



Reduction of 4,207 MT CO2 e/yr

100% equals all ERAP GHG emission reductions from all ERAP strategies. LUT represents 21.74% reduction outlined in LUT Chapter.

Co-benefits

- Adaptation Strategy Support
- Air Quality
- Economy + Jobs
- Energy Conservation
- Public Health
- Resource Conservation
- Safer Streets
- Transportation System Improvement

The transportation sector, due to the reliance on fossil fuels, produces significant portions of a city's GHG emissions.

LUT strategies that offer zero-emissions mobility options or those that modify transportation behaviors can help reduce the amount of carbon that is produced in the City of Rancho Palos Verdes. Combining land use and transportation strategies can lead to a broad set of co-benefits and improve the mobility of residents, employers and visitors. As part of the ERAP effort, the SBCCOG has developed a unique suite of LUT strategies for the reduction of GHG emissions in the South Bay subregion. The LUT measures, referenced in this ERAP, are a combination of strategies from two primary sources:

- Traditional LUT strategies referenced in a GHG emission manual developed by the California Air Pollution Control Officers Association (CAPCOA).
- Strategies developed by the SBCCOG from extensive research in the region; these strategies are known as the Sustainable South Bay Strategies (SSBS) and are suited for mature suburban areas.

A full list of LUT strategies along with their references is available in Appendix C- Land Use and Transportation (LUT) Measures and Methodology. This ERAP presents the strategies Rancho Palos Verdes is interested in implementing. The City selected the following LUT Strategies in consideration of its GHG reduction targets for 2020 and 2035 in support of the State of California 2050 GHG reduction goal. GHG reduction efforts undertaken by the City since 2012 (last inventory year) were included towards GHG emissions reductions of this plan.

GOAL LUT: A - ACCELERATE THE MARKET FOR EV VEHICLES

Gasoline-fueled vehicles have been one of the primary sources of GHG emissions in cities. By encouraging and helping to develop the Electric Vehicle (EV) market, cities can help consumers choose EVs when purchasing a new vehicle such as: Plug-in Hybrid Electric Vehicles (PHEVs), full Battery Electric Vehicles (BEVs), and Neighborhood Electric Vehicles (NEV).

MEASURE LUT: A1 - EV PARKING POLICIES

EV parking policies, such as free or reduced parking for EVs, can provide incentives to EV adoption. EV parking policies include changes to current parking policies, incentives in future parking agreements, granting new businesses lower parking minimums in exchange for EV or NEV preferential parking, and requiring smaller parking dimensions.

The City of Rancho Palos Verdes will explore conversion of 10% of City-owned parking spaces over the next 5 to 10 years through the sub-strategies listed in table LUT: A1.

LUT: A1 Sub-strategies

LUT: A1.1	Offer free parking to EVs.
LUT: A2.1	Offer reduced-price EV parking.

MEASURE LUT: A2 - EV CHARGING POLICIES

EV charging policies incentivize EV adoption by making it easier to charge EVs. City strategies to support these policies can range from on-the-ground implementation of charging stations (level 1, 2, and DC 3) to adopting new development standards relating to EVs.

The City of Rancho Palos Verdes is interested in exploring charging stations at City Hall, Ladera Linda, Hesse Park and Ryan Park. The city will explore the following sub-strategies listed in table LUT: A2, over the next 5 to 10 years.

LUT: A2 Sub-strategies

LUT: A2.1	Install level 1, 2, and DC 3 charging in city-owned parking lots.
LUT: A2.2	Create policies that encourage facility owners to provide level 1 charging.
LUT: A2.3	Cooperate with regional agencies to expand charging networks.
LUT: A2.4	Install charging at city-owned facilities.

MEASURE LUT: A3 - ADMINISTRATIVE READINESS

Administrative readiness refers to what cities can do within city hall to incentivize EV adoption. Actions span from expediting inspection times for the installation of EV charging to streamlining panel upgrades.

The City of Rancho Palos Verdes will continue offering services listed in the sub-strategies table LUT: A3.

LUT: A3 Sub-strategies

LUT: A3.1	Reduce costs of electric permits for service upgrades.
LUT: A3.2	Offer online permitting to streamline the application process.
LUT: A3.3	Minimize time to complete inspection.
LUT: A3.4	Offer inspection within 24 hours of request.
LUT: A3.5	Streamline electrical panel upgrade.

MEASURE LUT: A4 - PUBLIC INFORMATION PROGRAMS

EV public information programs aim to promote EV usage and adoption through education. These programs can take the form of an advertisement or marketing campaign through social media, municipal offices, community centers, businesses, events, and online platforms.

Rancho Palos Verdes will implement the sub-strategy in table LUT: A4.

LUT: A4 Sub-strategies

LUT: A4.1	Publicize EV programs through a variety of media.

GOAL LUT: B - ENCOURAGE RIDE-SHARING

Ride-hailing and Ride-sharing can be an efficient way of carrying more people per trip than individuals driving alone, by facilitating the temporary use of a car that one does not own. For example, services like Car2Go, ZipCar, Uber, Lyft, and Waze all provide services that could reduce the need for families to own a second and third vehicle. When sharing the trip or if sharing an EV, GHG emissions are reduced.

MEASURE LUT: B1 - FACILITATE PRIVATE AND PUBLIC MOBILITY SERVICES (RIDE-HAILING, RIDE-SHARING, CAR-SHARING)

This strategy encourages public and private mobility services. It includes supporting private vendors in search of funds and not adopting positions that limit or exclude vendors. The measure considers service inter-operability as well as optimizing the customer experience for local residents.

In support of ride-sharing, the City of Rancho Palos Verdes will incorporate the sub-strategies in table LUT: B1.

LUT: B1 Sub-strategies

LUT: B1.1	Facilitate Ride-hailing and Ride-sharing.
LUT: B1.2	Remove barriers to private sector car-sharing.

GOAL LUT: C - ENCOURAGE TRANSIT USAGE

Increasing transit service, frequency, and speed incentivizes transit usage and reduces the collective GHG emissions from mobile sources within the city. Transit can shrink the number of vehicles needed to complete commutes, resulting in lower CO2 emissions.

MEASURE LUT: C1 - EXPAND TRANSIT NETWORK

This strategy focuses on expanding the local transit network by adding or modifying existing transit service; additionally, it includes transit strategies that address first/last mile connections which can encourage more people to travel via transit.

In support of expanding the transit network, Rancho Palos Verdes will explore further implementation of the sub-strategies in table LUT: C1.

LUT: C1 Sub-strategies

LUT: C1.1	Work with Transit Agency to expand bus and rail transit network.
LUT: C1.2	Work with Transit Agency to improve transit connectivity.
LUT: C1.3	Collaborate with a range of agencies to expand funding for transit.
LUT: C1.4	Work with Transit Agency to improve transit amenities.
LUT: C1.5	Work with Transit Agency to better accommodate bicycles.
LUT: C1.6	Prioritize funding around transit stations to encourage walking and biking.
LUT: C1.7	Explore programs to offer discounted transit passes.
LUT: C1.8	Fund transit services for elderly and handicapped.

MEASURE LUT: C2 - INCREASE TRANSIT SERVICE FREQUENCY AND SPEED

This strategy will reduce travel time for transit-passengers through increasing frequency of service, speed, and reliability. Increasing transit frequency has been shown to increase the appeal and use of transit.

The City of Rancho Palos Verdes will consider the following sub-strategies, on table LUT: C2.

LUT: C2 Sub-strategies

LUT: C2.1	Work with Transit Agency to increase service frequency and speed.
LUT: C2.2	Provide transit buses with signal prioritization devices.

GOAL LUT: D - ADOPT ACTIVE TRANSPORTATION INITIATIVES

Active transportation initiatives are components of slow speed multi-modalism. The land use strategies of the SSBS specifically support more walking as well as cycles of all sorts (mono-, bi-, tri- and quad-cycles).

MEASURE LUT: D1 - PROVIDE TRAFFIC CALMING MEASURES

Traffic calming measures create streets that are friendly to active modes such as walking and biking and users of public transit. These measures have the potential to encourage greater adoption of active transportation due to increased safety and attractiveness. Examples include: marked crosswalks, curb extensions, planter strips with trees, and roundabouts.

The City will consider the sub-strategies in table LUT: D1.

LUT: D1 Sub-strategies

LUT: D1.1	Conduct a pedestrian/bicycle study.
LUT: D1.2	Implement traffic calming measures in existing and future developments.
LUT: D1.3	Promote traffic calming methods such as landscaped medians and traffic circles.

MEASURE LUT: D2 - IMPROVE DESIGN OF DEVELOPMENT

This measure provides improved design elements to enhance slow speed multi-modalism such as walking and bicycling. This strategy may complement the slow-speed concepts found in the SSBS to increase connectivity within new or proposed developments and improves street network characteristics within a neighborhood. These concepts could include slow-speed multi-modal networks.

Subject to resource availability, the City of Rancho Palos Verdes will explore the sub-strategies in table LUT: D2.

LUT: D2 Sub-strategies

LUT: D2.1	Amend the Trail Master Plan.
LUT: D2.2	Require Bicycle parking through Zoning Code or other implementation documents.
LUT: D2.3	Require new developments to provide pedestrian, bicycle, and transit amenities .
LUT: D2.4	Require commercial and multi-family residential projects to provide permanent bicycle parking facilities.
LUT: D2.5	Develop appropriate bicycle infrastructure for high traffic intersections and corridors.
LUT: D2.6	Develop appropriate infrastructure within pedestrian sheds of key areas.
LUT: D2.7	Create bicycle lanes, routes, and shared-use paths into street systems, subdivisions, and large developments .
LUT: D2.8	Improve active transportation networks (identify gaps/deficiencies and implement projects to address them).
LUT: D2.9	Construct or improve pedestrian infrastructure around transit.
LUT: D2.10	Implement policies to minimize conflicts between pedestrian and motorists. Identify pedestrian collision hot spots.

GOAL LUT: E - PARKING STRATEGIES

Vehicle trips are tied to parking availability and cost. Parking strategies can incentivize the use of other modes and potentially reduce the number of vehicles owned per household.

MEASURE LUT: E1 - REQUIRE RESIDENTIAL AREA PARKING PERMITS

This strategy will require the purchase of residential parking permits (RPPs) for long-term use of on-street parking in residential areas. Permits reduce the impact of spillover parking in residential areas adjacent to commercial areas, transit stations, or other locations where parking may be limited and/or priced.

The City of Rancho Palos Verdes will continue to implement the sub-strategies listed in table LUT: E1.

LUT: E1 Sub-strategies

LUT: E1.1	Institute residential parking programs.
LUT: E1.2	Institute residential permit parking.

GOAL LUT: F - ORGANIZATIONAL STRATEGIES

Cities and other organizations within a city can implement telecommuting and alternative work schedule policies to reduce the Vehicle Miles Traveled (VMT) generated by employees. They can also expand and facilitate commute programs such as vanpooling and carpooling to reduce employee-generated VMT. Cities can also implement policies and ordinances that require or encourage private sector employers to implement programs for their employees.

MEASURE LUT: F1 - ENCOURAGE TELECOMMUTING AND ALTERNATIVE WORK SCHEDULES

Alternative work schedules take the form of staggered starting times, flexible schedules, or compressed work weeks. Alternative workplace programs are: 1) working at home-offices which eliminate a work trip entirely or 2) working at an office closer to the home which reduces part of the work trip. Cities can offer workplace programs at neighborhood centers, available space in government offices, public shared-work facilities, or commercial executive suites.

The City will explore the sub-strategy in table LUT: F1.

LUT: F1 Sub-strategies

LUT: F1.1	Encourage local employers to implement telecommuting and alternative work schedules.

MEASURE LUT: F2 - IMPLEMENT A COMMUTE TRIP REDUCTION PROGRAM

This measure establishes a Commute Trip Reduction (CTR) Ordinance.

The City will explore the sub-strategies in table LUT: F2.

LUT: F2 Sub-strategies

LUT: F2.1	Implement a (voluntary) commute trip reduction program.
LUT: F2.2	Implement an employee education program.

GOAL LUT: G - LAND USE STRATEGIES

Traditional land use strategies are difficult to integrate into the South Bay Cities pattern of development. As a result, this plan proposes Neighborhood Oriented Development (NOD) strategies, which are based on South Bay specific research. Specific to "mature suburbs" like those found in the South Bay, NOD strategies address the inefficiencies of the auto suburb by clustering destinations to residential neighborhoods, while preserving residential character of the area, thereby increasing walking to destinations and shortening trip lengths.

MEASURE LUT: G1 - EXPLORING THE INTEGRATION OF LAND USE

These strategies explore the integration of uses, such as office, commercial, institutional and residential within the same development.

Subject to policy direction, the City of Rancho Palos Verdes will explore sub-strategies in table LUT: G1.

LUT: G1 Sub-strategies

LUT: G1.1	Explore the integration of mixed use policies in the General Plan.
LUT: G1.2	Explore mixed use policies through Zoning Code Amendments.
LUT: G1.3	Explore mixed use and infill development in key areas as in existing commercial corridors.

MEASURE LUT: G2 - INCREASE TRANSIT ACCESSIBILITY

Transit accessibility strategies involve measures that encourage transit services through general plans, zoning codes and ordinances as well as filling in gaps within the transit network.

Rancho Palos Verdes will increase transit accessibility by utilizing the sub-strategy in table LUT: G2.

LUT:G2 Sub-strategies

LUT: G2.1	Encourage Transit Accessibility through General Plan.

MEASURE LUT: G3 - DEVELOP A NOD PLAN

These strategies encourage NOD through zoning codes, general plans, ordinances, and area specific plans. A NOD strategy clusters destinations in functionally robust centers within walking distance of most households. Multiple NODs are accessible across cities, at regular intervals, so that each household can access multiple centers within a few miles, ultimately reducing VMT.

The City will explore the sub-strategy in table LUT: G3.

LUT: G3 Sub-strategies

LUT: G3.1	Establish NOD centers in zoning code.

GOAL LUT: H - DIGITAL TECHNOLOGY STRATEGIES

A new concept that is unique to Neighborhood Oriented Development (NOD) is the development and deployment of digital technologies as a GHG emission reduction strategy. The central premise is that services provided by cities and those available at NODs will be delivered in part through digital technologies. Digital mediums lessen the need to travel to seek and deliver services. Providing infrastructure to support digital technology applications can be undertaken by cities and involves collaboration to construct a state-of-the-art broadband network infrastructure that will deliver network connectivity.

LUT: H1 - COLLABORATE ON AND IMPLEMENT THE SOUTH BAY DIGITAL MASTER PLAN

The City of Rancho Palos Verdes will explore the following digital technology sub-strategies in table LUT: H1.

LUT: H1 Sub-strategies

LUT: H1.1	Implement the South Bay Digital Master Plan "South Bay Net."
LUT: H1.2	Implement e-government initiatives.
LUT: H1.3	Develop city-wide area networks to connect public facilities and other key buildings with each other and the South Bay Net.

LUT STRATEGIES - CITY INPUTS

The GHG emissions reduction potential for the City of Rancho Palos Verdes from all LUT strategies combined was calculated based on the data in the table below. Cities set their own targets which were used as inputs for the calculations. The methodology for the calculations can be found in Appendix C.

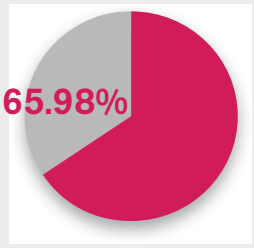
Number	Sub- Strategies	Performance Indicators	Target
1A1.01	Offer free parking to EVs in city lots and on-street	Percent of parking spaces allocated for EVs: This requires knowing how many parking spaces the city owns and what percent would be dedicated to EVs. Ex. City owns 100 and wants to dedicate 10: 10%	10%
1A1.02	Offer reduced-price EV parking in city lots and on-street	Percent of parking spaces with reduced pricing for EVs: This requires knowing how many parking spaces the city owns and what percent would be reduced for EVs. Ex. City owns 100 and wants to dedicate 10: 10%	10%
1A2.01	Install level 1 and 2 charging in city-owned parking lots	Percent of parking spaces with charging for EVs: This requires knowing how many parking spaces the city owns in public lots and what percent would have charging for EVs. Ex. City owns 100 and wants to dedicate 10: 10%	10%
1A2.06	Install charging at county or city-owned facilities	Percent of parking spaces with charging for EVs: This requires knowing how many parking spaces the city owns in public lots and what percent would have charging for EVs. Ex. City owns 100 and wants to dedicate 10: 10%	10%
1D2	Amend the Bicycle or Pedestrian Master Plan (Circle : Type of Plan)/ Develop appropriate pedestrian infrastructure within pedestrian sheds of key areas/ Construct or improve pedestrian infrastructure to increase access to transit and transit stations / hubs	Project A: Approximately 30019 Hawthorne Blvd. to 3116 Hawthorne Blvd	
		1. Within station/project and connecting offsite	No
		2. Within project only	Yes - To be Accomplished
		Project B: Trail Plan Area	
		1. Within station/project and connecting offsite	No
		2. Within project only	Yes - To be Accomplished
1D3	Implement policies to minimize conflicts between pedestrians and motorists. Identify intersections where large numbers of pedestrian / vehicle collisions are occurring and consider changes	Number of intersections per square mile within City or project	37 intersections per square mile in Residential area on the City's west side & 87 intersections per square mile on the City's east side (commercial/ residential areas along Western Ave)

Number	Sub- Strategies	Performance Indicators	Target
2B1.01	Within the City, encourage telecommuting and alternative work schedules (voluntary)	1. Percent of employees participating: This would require knowing number of municipal employees and percent that would participate.	100%
		2. Choose one of the following: a. 9-day/80 hour work week b. 4-day/40 hour work week and c. 1.5 days of telecommuting	9-80 work week
2C3.00	Encourage mixed-use policies through Zoning Code/ Encourage new mixed-use development near existing and planned transit corridors		
		Single Family	7%
		Multi-Family	0%
		Commercial	3%
		Industrial	0%
		Institutional	3%
		Park	4%
		Open Space Hazard	100%
2C5.00	Encourage Transit Accessibility through General Plan	Enter distance to downtown or major job center within the South Bay sub-regional boundaries	8.5 Miles

Energy Efficiency (EE)

2020 GHG Reduction Potential

ENERGY EFFICIENCY



Reduction of 12,766 MT CO2 e/yr

100% equals all ERAP GHG emission reductions from all ERAP strategies. EE represents 65.98% reduction outlined in EE Chapter.

Co-benefits

- Adaptation Strategy Support
- Air Quality
- Economy + Jobs
- Energy Conservation
- Public Health
- Resource Conservation
- Safer Streets
- Transportation System Improvement

Due to increasing electricity and natural gas demands, the built environment is a significant contributor to GHG emissions. Improving energy efficiency (EE) of the new and existing buildings and infrastructure at the residential, commercial and municipal level, will result in significant GHG reductions.

EE is defined as achieving the same services with less energy. Implementing EE strategies helps ensure a reliable, affordable, and sustainable energy system for the future.

The City of Rancho Palos Verdes is committed to providing a more livable, equitable, and economically vibrant community and sub-region through the implementation of energy efficiency measures and subsequent reduction of greenhouse gas (GHG) emissions. The City is undertaking various programs to enhance energy efficiency at the community and municipal levels such as: increase EE through water efficiency and decrease energy demand through reducing the urban heat island effect. The City, through its partnership with the SBCCOG, will obtain educational content, energy audit services, and assistance identifying potential funding sources to help implement strategies.

A full list of EE Strategies along with references is available in Appendix A- "Energy Efficiency CAP" including Methodology, Inventory & Forecast (inventory and forecast is listed in the "Energy Efficiency CAP Appendix A"). The City selected the following EE Strategies which were approved by the City Council in 2015 along with GHG reduction targets for 2020 and 2035 (in support of the State of California 2050 GHG reduction goal).

GOAL EE: A - INCREASE ENERGY EFFICIENCY IN EXISTING RESIDENTIAL UNITS

Residential sector carbon dioxide emissions originate primarily from the direct fuel consumption (principally, natural gas) for heating and cooking, and electricity for cooling/ heating, appliances, lighting, and increasingly for televisions, computers, and other household electronic devices. Improving EE at the residential level, reduces overall energy demand, which leads to a decrease in power plant emissions. It has other socio- economic benefits for the communities as well such as improved health and safety and lower utility costs.

MEASURE EE: A1 - EE TRAINING, EDUCATION, AND RECOGNITION

Opportunities for residents to improve EE in their homes range from changes to behavior that they can start today to physical modifications or improvements they can make to their homes. This measure will provide City staff with a framework to educate community members about behavioral and technological changes that can increase energy efficiency.

The City will explore the following sub-strategies on table EE: A1, to educate and train the community as the first key step towards increasing EE at the residential level.

EE: A1 Sub-strategies

EE: A1.1	Post links on website/social media and provide materials at Public Events.
EE: A1.2	Email list for email blasts of new information or trainings.
EE: A1.3	Establish an annual EE Fair.
EE: A1.4	Create a resource center.
EE: A1.5	Hire/Designate Energy Advocate.
EE: A1.6	Partner with South Bay Cities Council of Governments and Utilities to obtain educational content.

MEASURE EE: A2 - INCREASE PARTICIPATION IN EXISTING EE PROGRAMS

As part of the South Bay Energy Efficiency Partnership (SB Partnership) with SCE and SCG, the City will continue outreach efforts that are largely led by SBCCOG to promote energy awareness and existing programs and incentives that are offered for energy efficiency. Some examples of programs and resources are listed below:

Rebate programs through SCE and SCG for appliances, air conditioner alternatives, electric water heaters, light bulbs, space heaters, water heaters, pool heaters, showerheads, washers, and insulation. Demand Response programs through SCE that provide on-bill credits including the Summer Discount Plan and Save Power Days Program. Technical and financial assistance programs through SCG's Direct Install Weatherization Program for income-qualified renters and homeowners.

Through the sub-strategies listed in table EE: A2, the City will work to increase residents' participation in existing energy efficiency programs that are low cost or even provide a financial benefit to the resident.

EE: A2 Sub-strategies

EE: A2.1	Partner with SBCCOG and Utilities for outreach events.
EE: A2.2	Staff outreach to home owner associations (HOAs) and other housing groups.

MEASURE EE: A3 - ESTABLISH, PROMOTE OR REQUIRE HOME ENERGY EVALUATIONS

Home energy evaluations are necessary to identify cost-effective opportunities for energy saving and for residents to take practical actions to achieve EE.

The City will support home energy evaluations through a variety of existing programs and the sub-strategies in table EE: A3.

EE: A3 Sub-strategies

EE: A3.1	Promote home energy audits through programs such as Energy Upgrade California or other State programs.
EE: A3.2	Establish free "Energy Checkup" program with the assistance of the SBCCOG if funding can be obtained.

MEASURE EE: A4 - PROMOTE, INCENTIVIZE OR REQUIRE RESIDENTIAL HOME ENERGY RENOVATIONS

Approximately 78 percent of residential buildings in the City were built before the adoption of Title 24. Buildings built before adoption of Title 24 are not energy efficient, and renovations would achieve higher energy efficiency. Many programs and incentives across the state or country help promote home energy renovations, including city-supervised funding, permit process improvements and city ordinance.

In support of this measure, the City will implement sub-strategies EE: A4.

EE: A4 Sub-strategies

EE: A4.1	Promote existing incentivized programs such as Energy Upgrade California.
EE: A4.2	Develop or promote a green building program.
EE: A4.3	Promote Financing Programs such as PACE (Properly Assessed Clean Energy).
EE: A4.4	Waive or reduce permit fees to facilitate permit processing.
EE: A4.5	Establish online permitting to facilitate permit processing.

GOAL EE: B - INCREASE ENERGY EFFICIENCY IN NEW RESIDENTIAL DEVELOPMENT

EE Standards that are set beyond Title 24, are far more stringent and effective in reducing GHG emissions. Cities that develop resources for implementing these standards for new residential development will help conserve electricity and natural gas.

MEASURE EE: B1 - ENCOURAGE OR REQUIRE EE STANDARDS EXCEEDING TITLE 24

As part of the 2010 California Green Building Standards (CALGreen), a two-tiered system was designed to allow local jurisdictions to adopt codes that go beyond state standards. The two tiers contain measures that are more stringent and achieve an increased reduction in energy usage by 15% (Tier 1) or 30% (Tier 2) beyond Title 24. It is also important that Title 24 Standards are updated so that the full GHG reduction benefit of the title can be realized. City staff that are well-informed can implement updates quickly and effectively.

Through the sub-strategies in table EE: B1, the City staff will act as a resource to encourage and implement EE building measures beyond that required in current Title 24 Standards.

EE: B1 Sub-strategies

EE: B1.1	Educate City staff, developers, etc., on future Title 24 updates and the additional energy efficiency opportunities for new residential development.
EE: B1.2	Promote Tier 1, Tier 2, Green Building Ratings such as LEED, Build It Green/Green Point Rating System, or Energy Star certified buildings.
EE: B1.3	Waive or reduce permit fees to facilitate permit processing.
EE: B1.4	Establish online permitting to facilitate permit processing.
EE: B1.5	Create an Energy award program for net-zero-net energy homes.

GOAL EE: C - INCREASE ENERGY EFFICIENCY IN EXISTING COMMERCIAL UNITS

Educating the community about the benefits of EE and equipping them with strategies and technologies to do so is the key for enhancing energy efficiency. Different tools such as social, digital, and print media can be used to educate stakeholders.

MEASURE EE: C1 - TRAINING AND EDUCATION

Education is at the core of attaining energy efficiency goals. Creating a specific education measure will emphasize the critical role of education in achieving energy efficiency.

The following education sub-strategies on table EE: C1 will provide City staff with a framework to interact with and instruct community members about behavioral and technological changes that can increase energy efficiency.

EE: C1 Sub-strategies

EE: C1.1	Post links on website/social media and provide materials at public events.
EE: C1.2	Email list for e-mail blasts of new information or trainings.
EE: C1.3	Establish an annual EE Fair.
EE: C1.4	Create a resource center.
EE: C1.5	Hire/Designate Energy Advocate.
EE: C1.6	Partner with SBCCOG and Utilities to obtain educational content.

MEASURE EE: C2 - INCREASE PARTICIPATION IN EXISTING EE PROGRAMS

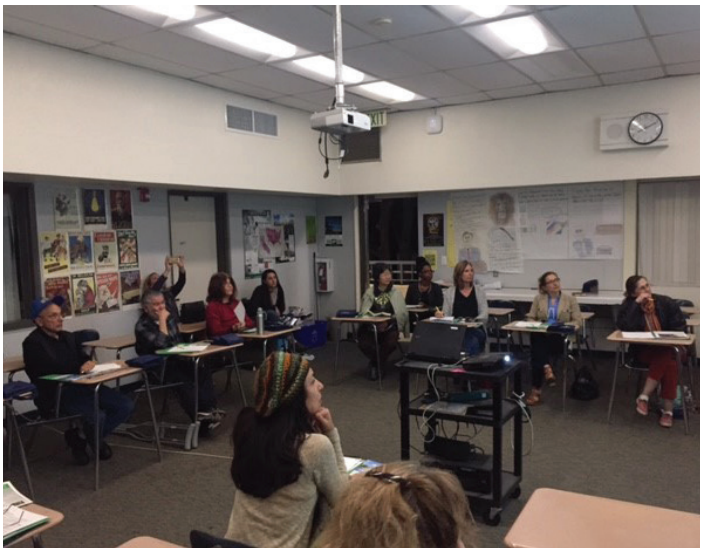
As part of the South Bay Partnership with SCE and SCG, the cities can conduct outreach efforts to promote energy awareness, existing programs, and incentives that are offered for EE. These outreach efforts are largely led by the SBCCOG. Some examples of programs and resources are listed below.

- Rebate programs through SCE and SCG for appliances, air conditioner alternatives, electric water heaters, light bulbs, space heaters, water heaters, and insulation.
- Demand Response programs though SCE that provide on-bill credits including the Summer Discount Plan and Save Power Days Program.

The City will work to increase businesses' participation in existing energy efficiency programs that are low-cost or provide a financial benefit to the business through the sub-strategies in table EE: C2.

EE: C2 Sub-Strategies

EE: C2.1	Partner with SBCCOG and Utilities for outreach events.
EE: C2.2	Staff outreach to business groups.



MEASURE EE: C3 - INCENTIVIZE OR REQUIRE NON-RESIDENTIAL ENERGY AUDITS

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

Through table EE: C3, the City will promote energy audits through various existing programs.

EE: C3 Sub-Strategies

EE: C3.1	Promote energy audits such as through Energy Upgrade California or other state programs.

MEASURE EE: C4 - PROMOTE OR REQUIRE COMMERCIAL ENERGY RETROFITS

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

In support of this measure, the City will implement sub-strategies EE: C4.

EE: C4 Sub-Strategies

EE: C4.1	Promote existing incentivized programs such as Energy Upgrade California.
EE: C4.2	Develop or promote a green building program.
EE: C4.3	Promote Financing Programs such as PACE (Properly Assessed Clean Energy).
EE: C4.4	Waive or reduce permit fees to facilitate permit processing.
EE: C4.5	Establish online permitting to facilitate permit processing.

GOAL EE: D - INCREASE ENERGY EFFICIENCY IN NEW COMMERCIAL DEVELOPMENTS

City planners are uniquely positioned to inform developers of new EE standards / technologies. Building capacity at City staff level to execute these strategies is essential for cities to leverage the benefits of increased energy efficiency in commercial development.

MEASURE EE: D1 - ENCOURAGE OR REQUIRE EE STANDARDS EXCEEDING TITLE 24

This measure will develop City Staff to be resources in encouraging and implementing energy efficiency beyond that are required by current Title 24 Standards for commercial development. In addition, this measure also helps ensure that as Title 24 Standards are updated, City staff are well-informed and can implement updates quickly and effectively.

The City planners act as a resource to inform developers of new EE opportunities and encourage them to adopt these technologies in new development through the sub-strategies listed on table EE: D1.

EE: D1 Sub-strategies

EE: D1.1	Educate City staff, developers, etc., on future Title 24 updates and the additional energy efficiency opportunities for new commercial development.
EE: D1.2	Promote Tier 1, Tier 2, Green Building Ratings such as LEED, Build It Green/Green Point Rating System, or Energy Star certified buildings.
EE: D1.3	Waive or reduce permit fees to facilitate permit processing.
EE: D1.4	Establish online permitting to facilitate permit processing.
EE: D1.5	Create an Energy award program for net-zero-net energy businesses.

GOAL EE: E - INCREASE ENERGY EFFICIENCY THROUGH WATER EFFICIENCY (WE)

Providing safe drinking water and wastewater disposal is an energy-intensive process. Reducing water consumption saves energy because less water needs to be treated and pumped to end users. Moreover, when energy use is reduced, water is saved because less is needed in the operation of power plants. Through water efficiency measures, cities can help to protect dry areas from drought, lower consumers' utility bills, and reduce GHG Emissions.

MEASURE EE: E1 - PROMOTE OR REQUIRE WATER EFFICIENCY THROUGH SB X7-7

The Water Conservation Act of 2009 (SB X7-7), requires all water suppliers to increase water use efficiency. The legislation set an overall goal of reducing per capita urban water consumption by 20 percent from a baseline level by 2020. The goal of Water Conservation Act can be met by taking a variety of actions, including targeted public outreach and promoting water efficiency measures such as low-irrigation landscaping. Additional water conservation information, resource materials, education, and incentives are available through the West Basin Municipal Water District (WBMWD).

The City will take the following actions in support of the sub-strategies listed in table EE: E1.

EE: E1 Sub-strategies

EE: E1.1	Post links on websites/ social media and provide materials at public events.
EE: E1.2	Email list for e-mail blasts of new information or trainings.
EE: E1.3	Require low-irrigation landscaping.
EE: E1.4	Partner with SBCCOG and WBMWD to obtain educational content.
EE: E1.5	Partner with SBCCOG and WBMWD for outreach events.

MEASURE EE: E2 - PROMOTING WATER EFFICIENCY STANDARDS EXCEEDING SB X7-7

In addition to SB X7-7, more actions are being studied or have been taken to exceed water efficiency standards. These efforts include education and outreach practices that could be combined with residential and commercial actions that emphasize the reuse of recycled/gray water and promote harvesting rainwater. Approximately 1,873 kWh can be saved for every acre foot (AF) of water use replaced by recycled water.

The City will take the following actions in support of the sub-strategies on table EE: E2.

EE: E2 Sub-strategies

EE: E2.1	Staff time dedicated to work with HOAs, businesses, and other groups for outreach.
EE: E2.2	Allow recycled or grey water uses for non-municipal uses.
EE: E2.3	Work with Water District to increase recycled water potential.
EE: E2.4	Promote rainwater harvesting rebates and demonstrations.

GOAL EE: F - DECREASE ENERGY DEMAND THROUGH REDUCING URBAN HEAT ISLAND EFFECT

Shade trees and smaller plants such as shrubs, vines, grasses, and ground cover, help cool the urban environment. Yet, many U.S. communities have lost trees and green space as they have grown. This change is not inevitable. Many communities can take advantage of existing space, such as grassy or barren areas, to increase their vegetative cover and reap multiple benefits; such as reduced GHG emissions through reduced energy demands, carbon sequestration, improved human health etc.

MEASURE EE: F1 - PROMOTE TREE PLANTING FOR SHADING AND EE

Trees and plants naturally help cool an environment by providing shade and evapotranspiration (the movement of water from the soil and plants to the air), making vegetation a simple and effective way to reduce urban heat islands. Urban heat islands are urban areas that are significantly warmer than their surrounding rural areas due to human activities. Shaded surfaces may be 20–45°F cooler than the peak temperatures of un-shaded materials. In addition, evapotranspiration alone or in combination with shading can help reduce peak summer temperatures by 2–9°F. Furthermore, trees and plants that directly shade buildings can reduce energy use by decreasing demand for air conditioning.

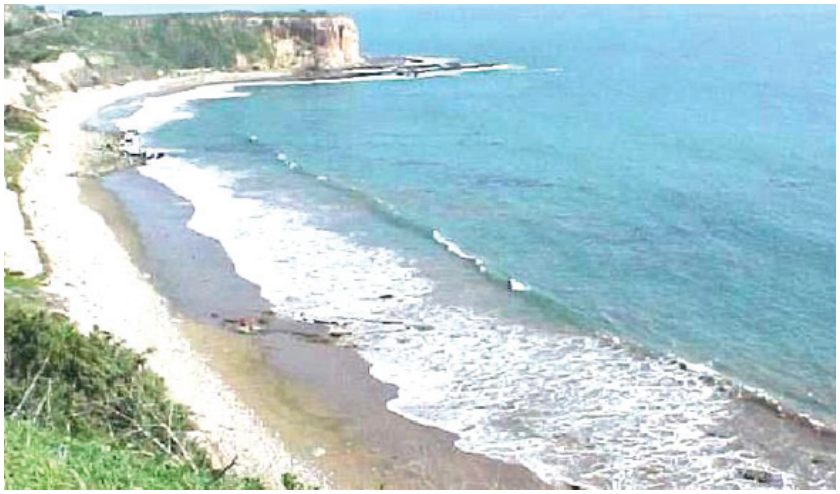
In support of this measure and when not in conflict with the City's View Ordinance, the City will explore the following sub-strategies in table EE: F1.

EE: F1 Sub-strategies

EE: F1.1	Encourage tree planting at plan check.
EE: F1.2	Work with community to develop a tree-planting group.
EE: F1.3	Develop a City tree planting program.

GOAL EE: G - PARTICIPATE IN EDUCATION, OUTREACH AND PLANNING FOR ENERGY EFFICIENCY

Educating stakeholders about the EE programs and providing technical assistance for implementing those strategies is crucial for achieving increased energy savings. Southern California Edison's (SCE) Energy Leadership Partnership (ELP) Program, provides a robust framework for cities to implement EE strategies.



MEASURE EE: G1- INCREASE ENERGY SAVINGS THROUGH THE SCE ENERGY LEADER PARTNERSHIP

The Southern California Edison (SCE) Energy Leader Partnership (ELP) Program is a framework that offers enhanced rebates and incentives to cities that achieve measurable energy savings, reduces peak-time electricity demand, and plans for energy efficiency. This program also provides resources to cities to identify energy efficiency projects and technical assistance to implement them. The ELP has a tiered incentive structure with threshold criteria required to trigger advancement to the next level of participation.

The City will continue to participate in the ELP to help identify EE projects at municipal facilities and take advantage of incentives offered through the program.

GOAL EE: H - INCREASE ENERGY EFFICIENCY IN MUNICIPAL BUILDINGS

Energy management for municipal buildings provides a quick "win" for cities and builds long-term capacity to develop EE projects and monitor and control energy use. The first crucial step towards energy management in municipal buildings is, conducting comprehensive energy audit to examine energy use patterns and performance of equipment.

MEASURE EE: H1- CONDUCT MUNICIPAL ENERGY AUDIT

Knowledge of building energy use is an effective way to determine energy inefficiencies and opportunities for retrofits and upgrades. Initial energy benchmarking was conducted for the buildings and facilities within the City to provide a baseline for comparison. Annual review of energy use within each building is a best practice to see trends and determine if the energy efficiency retrofits are effective. These annual reviews of energy use can also assist in determining when calibrating HVAC equipment or other maintenance is required to keep the building at peak efficiency.

Energy audits are a comprehensive review of both energy use and key components of the building. Energy audits provide an improved understanding of energy use, reveal energy inefficiencies of the building or building energy appliances, and offer recommendations on how to improve or correct the energy inefficiencies through retrofits or upgrades.

The City will review the energy usage at their facilities and conduct an energy audit within the next 5 years.

MEASURE EE: H2 - REQUIRE GREEN BUILDING CERTIFICATION

Leadership in Energy & Environmental Design (LEED) is a rating system for buildings, homes, and communities developed by the U.S. Green Building Council (USGBC).

Under this measure, the City could improve energy efficiency by requiring LEED certification, or certification through another green building rating system, for its municipal buildings.

MEASURE EE: H3 - IMPLEMENT WATER LEAK DETECTION PROGRAM

Losing water from unrepaired leaks and operating at unnecessarily high-pressure results in wasted water, energy, and GHGs. The City can avoid this waste as a best practice by conducting water audits to detect and repair leaks, developing a pressure management strategy, and devising a long-term water loss control plan.

The City of Rancho Palos Verdes is a municipal water provider. In 2014, SCE funded a Water Leak Detection Program to provide these services to the City as the municipal water provider. The results of the audit indicated no water leaks.

MEASURE EE: H4 - PARTICIPATE IN DEMAND RESPONSE PROGRAMS

Electricity is supplied to buildings immediately upon demand. During hours of peak demand, such as the late afternoon, the electricity grid is often put under stress to supply the increased demand. Demand Response Programs offer incentives (e.g. discounted rates and bill credits) to electricity consumers to reduce their energy demand, or shift their demand to off-peak hours, in response to grid stress.

The City participates in a demand response program.

MEASURE EE: H5 - PARTICIPATE IN DIRECT INSTALL PROGRAM

SCE offers a Direct Install Program to reduce energy costs and save money. The program is funded by the utility ratepayers and includes a free assessment of buildings by a contractor and installation of free energy-efficient replacement equipment. Examples of the energy-efficient equipment include fluorescent lighting, LED signs, window film, and programmable thermostats.

The City will consider future opportunities to participate in direct install programs as they become available.

MEASURE EE: H6 - ADOPT A PROCUREMENT POLICY FOR EE EQUIPMENT

Energy efficient procurement policies can reduce government facility energy costs by about 5 to 10 percent. As municipal appliances wear over time; the cities should replace them with Energy Star or energy efficient equipment. Energy Star offers an appliance calculator to estimate money and energy saved by purchasing its products.

The City will replace worn municipal appliances with more EE equipment. Based on the City's energy consumption, it has been determined that the reduction potential of a procurement policy would be close to 5 percent.

MEASURE EE: H7- INSTALL COOL ROOFS

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

The City will consider replacing municipal facility roofs with albedo as replacement is needed.

MEASURE EE: H8 - RETROFIT HVAC EQUIPMENT AND WATER PUMPS

Heating, ventilation, and air conditioning (HVAC) and/or water pump equipment at municipal facilities have been identified as potential retrofit opportunities and can qualify for incentives through the SCE ELP. By replacing aging equipment with newer, more efficient equipment, the cities will reduce energy consumption and associated GHG emissions.

The City will switch aging equipment with more efficient equipment at the time of replacement.

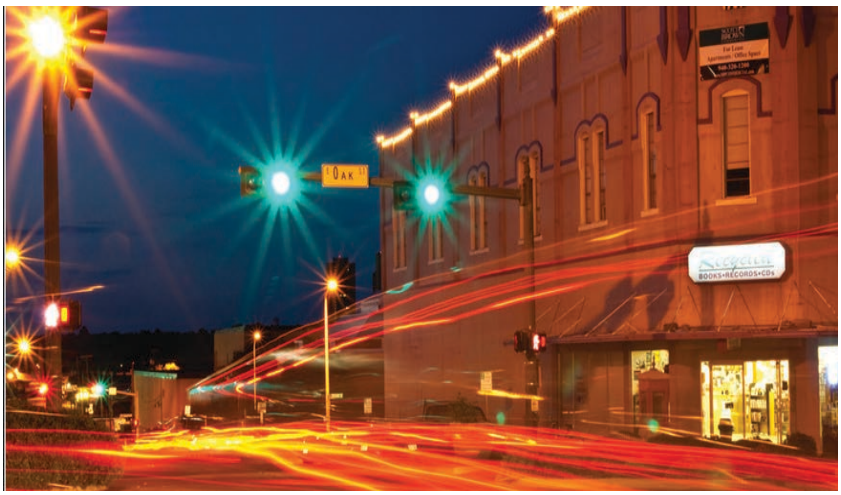
MEASURE EE: H9 - UTILIZE AN ENERGY MANAGEMENT SYSTEM

Detailed information about facility energy consumption, including hourly energy profiles and energy consumption of individual building systems, can be monitored on a regular basis through an energy management system. An Energy Management System tool allows City staff to observe "real-time" energy consumption and analyzes building energy consumption trends using utility bill information.

The City will use Energy Management tools to monitor long-term impacts of efficiency projects.

GOAL EE: I - INCREASE ENERGY EFFICIENCY IN CITY INFRASTRUCTURE

Retrofitting outdoor lighting and traffic signals, promoting water conserving landscape, planting more trees, and reducing energy consumption in the long-term are some of the steps that are taken by the City towards making its infrastructure more energy efficient.



MEASURE EE: I1 - RETROFIT TRAFFIC SIGNALS AND OUTDOOR LIGHTING

Since 2001, SCE has offered its municipalities rebates on LED Traffic Signal Lamps. The program is part of a statewide effort to conserve energy and promote energy efficiency. Retrofitting a standard incandescent traffic signal with LED lamps using the SCE rebate can result in a payback of less than one year. Other outdoor lights (e.g. streetlights, park lighting, etc.) can also be retrofitted.

The City will explore opportunities to retrofit traffic signals and outdoor lighting.

MEASURE EE: I2 - UPGRADE OR INCORPORATE WATER-CONSERVING LANDSCAPE

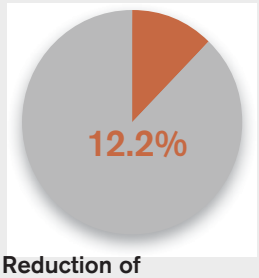
The majority of California's current water sources require high-energy inputs. Pumping, treating, transporting, and heating water currently represents nearly 20% of the energy used across the state. Much of this energy use is the result of a heavy reliance on "imported" water, because the majority of California's water users are concentrated far from major water sources. One consequence of the energy used to transport water is high GHG emissions. Transporting water via California's State Water Project alone is 2% to 3% of the state's total energy and results in roughly 4 million tons of GHG emissions per year . Furthermore, water scarcity is going to be exacerbated with climate change. This underscores the importance of water conservation. Developing drought tolerant landscapes and encouraging the use of recycled water are two ways to improve the resiliency of water supply and hence reducing GHG emissions.

The City can reduce water consumption and associated energy use by converting traditional landscaping to water conserving landscaping. The City can participate in SoCal WasterSmart's Public Agency Landscape (PAL) program to receive a no-cost landscape irrigation audit and incentives to replace older landscape equipment with new, water-efficient models. No landscaping was converted between 2013 and 2015; however, the City is currently assessing areas for conversion in the future.

Solid Waste (SW)

2020 GHG Reduction Potential

SOLID WASTE



Reduction of 2,361 MT CO2 e/yr

100% equals all ERAP GHG emission reductions from all ERAP strategies. SW represents 12.2% reduction outlined in SW Chapter.

Co-benefits

- Air Quality
- Energy Conservation
- Public Health
- Resource Conservation
- Safer Streets

Waste prevention and recycling - jointly referred to as waste reduction - help to better manage solid waste and reduce GHG emissions. Together, waste prevention and recycling:

- Reduce emissions from energy consumption: Manufacturing goods from recycled materials typically requires less energy than producing goods from virgin materials. When people reuse things or when products are made with less material, less energy is needed to extract, transport, and process raw materials and to manufacture products. Reduced energy demands lead to less combustion of fossil fuels and associated carbon dioxide (CO2) emissions.

- Reduce emissions from incinerators: Recycling and waste prevention allow some materials to be diverted from incinerators and thus reduce GHG emissions from the combustion of waste.

- Reduce methane emissions from landfills: Waste prevention and recycling (including composting) divert organic wastes from landfills, reducing the methane released when these materials decompose.

- Increase storage of carbon in trees: Trees absorb carbon dioxide from the atmosphere and store it in wood, in a process called “carbon sequestration.” Waste prevention and recycling of paper products allow more trees to remain standing in the forest, where they can continue to remove CO2 from the atmosphere.

A full list of SW Strategies along with references is available in Appendix D - Solid Waste Measures and Methodology. This ERAP presents the strategies Rancho Palos Verdes is interested in implementing. The City selected the following SW Strategies in consideration of its GHG reduction targets for 2020 and 2035 in support of the State of California 2050 GHG reduction goal. SW GHG reduction efforts undertaken by the City since 2012 (last inventory year) were included towards GHG emissions reductions of this plan.

GOAL SW: A - INCREASE DIVERSION AND REDUCTION OF RESIDENTIAL WASTE

Educating local communities about waste reduction is a key step for managing waste at the residential level. Better waste management practices lead to reduced energy consumption associated with waste removal and processing and associated GHG emissions.

MEASURE SW: A1 - EDUCATION AND OUTREACH TO THE RESIDENTS

Providing education and outreach to residents about opportunities to divert their waste away from the landfill will increase awareness of solid waste programs, encourage waste-reducing behaviors, and inspire participation in further environmental activities.

The City currently offers free waste reduction assemblies to local schools. It also offers special recognition to residential property owners who recycle the most with two $250 awards per month. In addition, the City plans to promote and educate the public about methods and benefits of waste reduction and diversion by implementing the sub-strategies in table SW: A1.

SW: A1 Sub-strategies

SW: A1.1	Educate residents about waste reduction and diversion – Provide information to residents about recycling, composting, and source reduction opportunities on the website, newsletters, or flyers.
SW: A1.2	Educate to discourage single-use bag use – Promote a public education outreach program to encourage use of reusable bags when making purchases.
SW: A1.3	Educate schools about recycling and waste reductions – Work with schools and/or community groups to help develop and distribute educational materials related to recycling and waste reduction for use in the classroom.

MEASURE SW: A2 - IMPLEMENT RESIDENTIAL COLLECTION PROGRAMS TO INCREASE DIVERSION OF WASTE

Implementing collection programs for residents will divert waste from going to the landfill by providing opportunities for more recycling, composting, and source reduction.

The City will expand the services for residential waste collection programs and will implement brush clearance events with the public. The City will also implement the sub-strategies in table SW: A2.

SW: A2 Sub-strategies

SW: A2.1	Implement a Pay-As-You-Throw Program – Continue to provide economic incentive to decrease waste using the user-pay principle, such as increasing the rates for larger sized trash bins.
SW: A2.2	Promote a Food Scrap Diversion program for residents in Multifamily units – Investigate a food waste collection service for residents in Multifamily units.
SW: A2.3	Implement collection of green waste for residents – Continue to provide a green waste collection service for residents.

GOAL SW: B - INCREASE DIVERSION AND REDUCTION OF COMMERCIAL WASTE

Education and providing better waste management options and tools to businesses will lead to a reduction in GHG emissions associated with processing and disposing of commercial wastes.

MEASURE SW: B1 - EDUCATION AND OUTREACH TO BUSINESSES

Providing education and outreach to businesses about opportunities to divert their waste away from the landfill will increase awareness of solid waste programs, encourage waste-reducing behaviors, and inspire participation in further environmental activities.

The City currently contracts with a consultant who provides waste audit services in collaboration with the City's trash hauler contractor. The City will utilize this existing system along with its own resources to develop tools for educating businesses about methods for waste reduction and diversion by implementing the sub-strategies on table SW:B1.

SW: B1 Sub-strategies

SW: B1.1	Educate businesses about waste reduction and diversion – Provide information to businesses about recycling, composting, and source reduction opportunities on the website, newsletters, or flyers.
SW: B1.2	Offer waste audit for businesses - working with trash hauler company to create a waste audit program.
SW: B1.3	Offer recognition for green businesses – Continue implementing a program that rewards or recognizes local businesses with waste reduction programs.

MEASURE SW: B2 - IMPLEMENT COMMERCIAL COLLECTION PROGRAMS TO INCREASE DIVERSION OF WASTE

Implementing collection programs for businesses will divert waste from the landfill by providing opportunities for more recycling, composting, and source reduction.

The City plans to implement waste collection programs for businesses to help divert waste from landfills through the sub-strategies in table SW: B2.

SW: B2 Sub-strategies

SW: B2.1	Implement a Pay-As-You-Throw program – Provide economic incentive to decrease waste using the user-pay principle, such as increasing the rates for larger sized trash bins.
SW: B2.2	Implement a Food Scrap Diversion program for businesses – Provide a food waste collection service for businesses.

MEASURE SW: B3 - REQUIRE COMMERCIAL SECTOR TO FURTHER INCREASE DIVERSION OF WASTE FROM-LANDFILLS

Setting additional requirements for the commercial waste sector will support further reductions in greenhouse gas emissions.

The City will explore a solid waste management plan before approving permits for special events as required by California law AB 2176 for large venues and events, through the sub-strategies in table SW: B3.

SW: B3 Sub-strategies

SW: B3.1	Consider the distance of the designated material recovery facilities (MRFs) and recycling facilities – When awarding franchise contracts, investigate taking the distance of the facilities into consideration.
SW: B3.2	Promote food waste and recycling at special events – Before approving permits, investigate requiring special events' solid waste management plans to include food waste collection and recycling.

GOAL SW: C - REDUCE AND DIVERT MUNICIPAL WASTE

Increasing awareness through implementing education strategies are key to achieving waste reductions and diversion. Like residential and commercial sectors, the municipal sector will also benefit from implementing capacity building programs to educate employees about benefits and methods of waste reducing behaviors.

MEASURE SW: C1 - SET A COMMUNITY GOAL TO DIVERT WASTE FROM LANDFILLS

Education to employees will increase awareness of solid waste programs, encourage waste-reducing behaviors, and inspire participation in further environmental activities. Some of these strategies are also very visible and will set an example for the community to follow. Reducing municipal waste will help the City lead by example and demonstrate to the community that the City is committed to diverting waste from landfills.

The City will implement several programs to educate employees about waste reduction and will provide them with tools to conserve resources at the facilities. Rancho Palos Verdes will consider the following sub-strategies listed in table SW: C1.

SW: C1 Sub-strategies

SW: C1.1	Implement a Recycle at Work program to educate employees about the benefits of recycling and waste reduction in the work place.
SW: C1.2	Reduce paper in municipal facilities – Adopt a policy to encourage paper reduction through various activities such as: Reduce margins and logos on templates, letterheads, and memos; Upload bid documents using online resources instead of printing for contractors; Require fewer or smaller-sized copies of project plans; Use electronic devices for meetings; Require double sided printing when feasible.
SW: C1.3	Re-use materials at municipal facilities – Adopt a policy to re-use, repair, or refurbish office furniture and equipment at a cost savings compared to purchasing new materials.
SW: C1.4	Provide additional recycling in public places – Install additional recycling containers in public places such as parks and streets.
SW: C1.5	Adopt a Municipal Purchasing Policy – Investigate creating a purchasing policy for municipal facilities to reduce purchase of disposable items, and require environmentally preferable products to be purchased when possible and reasonable.

MEASURE SW: C2 - IMPLEMENT MUNICIPAL COLLECTION PROGRAMS TO INCREASE DIVERSION OF WASTE

Collecting food waste from municipal facilities will divert it from the landfills by increasing composting. The municipal food scrap collection program can be an example for the residential and commercial programs to follow.

The City will investigate providing a food waste collection service for municipal facilities through the sub-strategy listed on table SW: C2.

SW: C2 Sub-strategies

SW: C2.1	Promote a Food Scrap Diversion program for municipal facilities – Investigate providing a food waste collection service for municipal facilities.

Urban Greening (UG)

2020 GHG Reduction Potential

URBAN GREENING

Reduction of 15 MT CO2e/yr

100% equals all ERAP GHG emission reductions from all ERAP strategies. UG represents 0.08% reduction outlined in UG Chapter.

Co-benefits

- Adaptation Strategy Support
- Air Quality
- Economy + Jobs
- Energy Conservation
- Public Health
- Resource Conservation

Urban greening includes spaces such as parks, forests, green roofs, local agriculture, street trees, and community gardens. These spaces are “carbon sinks” as they store greenhouse gas emissions that are otherwise emitted into the atmosphere.

Other benefits of urban greening include providing critical ecosystem services, promoting physical activities, improving the psychological well being of community, and reducing vehicle miles traveled.

At the city level, the amount of actual GHG emission reductions achieved through Urban Greening are negligible; however, it is important to note that this does not diminish the importance of urban greening as a strategy to reduce GHG emissions for the City, due to its multiple co-benefits. The following chapter provides a list of goals, measures, and sub-strategies to encourage urban greening policies and practices within the City.

A full list of UG Strategies along with references is available in Appendix E - Urban Greening Measures and Methodology. This ERAP presents the strategies Rancho Palos Verdes is interested in implementing. The City selected the following UG Strategies in consideration of its GHG reduction targets for 2020 and 2035 in support of the State of California 2050 GHG reduction goal. UG GHG reduction efforts undertaken by the City since 2012 (last inventory year) were included towards GHG emissions reductions of this plan.

GOAL UG: A - INCREASE AND MAINTAIN URBAN GREENING IN THE COMMUNITY

The expansion of green spaces in Urban areas, is a pathway for reducing the CO2 emissions and energy use. The urban vegetation reduces the CO2 concentration from the atmosphere via photosynthesis and by carbon sequestration through plant growth. It also, reduces the energy use and CO2 emissions associated with water delivery by providing a medium for wastewater recycling and increased storm water retention.

MEASURE UG: A1 - INCREASE COMMUNITY GARDENS

Encouraging the community to create new gardens can contribute to GHG reductions by establishing new vegetated open space that will sequester CO2 from the atmosphere. Community gardens can also potentially reduce GHG emissions by providing the community with a local source of food. This strategy may reduce the number of vehicle trips and miles traveled by both food delivery service and the consumers to grocery stores as well as displace carbon-intensive food production practices.

The City will explore the sub-strategy listed on table UG: A1, to increase the number of community gardens.

UG: A1 Sub-strategies

UG: A1.1	Promote gardening and composting – Provide resources and information regarding community gardens and composting to educate the general public on how to grow organic edible plants.

MEASURE UG: A2 - SUPPORT LOCAL FARMS

Local farmers' markets reduce GHG emissions by providing the community with a more local source of food, potentially resulting in a reduction in the number of trips and vehicle miles traveled by both the food delivery service and the consumers traveling to grocery stores. If the food sold at the local farmers' market is produced organically, it can also contribute to GHG reductions by displacing carbon-intensive food production practices.

The City plans to explore and promote farmers' markets in the community through the sub-strategy in table UG: A2.

UG: A2 Sub-strategies

UG: A2.1	Promote farmers' market – Promote farmers market to the community through website, newsletters, or flyers.

GOAL UG: B - INCREASE AND MAINTAIN URBAN GREENING IN MUNICIPAL FACILITIES

Implementing urban greening strategies in municipal facilities will reduce greenhouse gas emissions while demonstrating to the community the City's commitment to improving the environment. Cities are also responsible for maintaining urban forest on municipal properties such as parks. Maintaining the urban forest reduces GHG emissions from decomposition of plant material.

MEASURE UG: B1 - RESTORATION/PRESERVATION OF LANDSCAPES

Maintenance is necessary to prevent the increase of emissions. If the urban forest is not maintained in the community, the decomposition of trees is a source of emissions. Urban and community forests broadly include urban parks, street trees, landscaped boulevards, public gardens, river and coastal promenades, greenways, wetlands, nature preserves, natural areas, and shelter belts of trees.

The City will take steps consistent with the City's View Ordinance towards conserving and maintaining landscape to promote emission reduction benefits achieved through preserving and planting trees and maintain the urban forest. Rancho Palos Verdes will explore the sub-strategy listed on table UG: B1.

UG: B1 Sub-strategies

UG: B1.1	Landscape/open space and tree maintenance – Develop a program to conserve open spaces and promote the ability of such resources to remove carbon from the atmosphere.

MEASURE UG: B2 - INCREASE OPEN SPACE

Creating vegetated land from previously developed land will sequester CO2 from the atmosphere that would not have been captured if there was no land change.

The City will explore the opportunities for expanding green spaces in the community through the sub-strategy listed in table UG: B2.

UG: B2 Sub-strategies

UG: B2.1	Further expand the City's existing preserve area open space – Increase the area of green and open space in the community.

ENERGY GENERATION AND STORAGE (EGS)

Co-benefits

- Adaptation Strategy Support
- Air Quality
- Economy + Jobs
- Energy Conservation
- Public Health
- Resource Conservation
- Transportation System Improvement

Energy generation and storage (EGS) strategies involve supporting clean renewable energy, and decreasing dependence on traditional, GHG-emitting power sources.

Renewable energy technologies such as wind, solar, geothermal, hydroelectric, and biomass - provide substantial benefits for the climate, human health , and economy. Some renewable energy technologies such as wind and solar have variable outputs which can cause them to generate power inconsistently. Storage technologies have the potential for smoothing out the electricity supply from these sources and ensuring that the supply of generation matches the demand. Different energy storage technologies such as thermal storage, compressed air, hydrogen, pumped hydroelectric storage, flywheels, and batteries contribute to electricity stability by working at various stages of the grid -- from generation to consumer end-use. The City recognizes the importance of energy generation and storage and will continue to explore how some of these technologies can be used locally. Because these strategies are exploratory, the GHG reductions were not be quantified for this CAP. As the City identifies and implements strategies in the future the associated GHG reductions will be quantified.

A full list of EGS Strategies along with references is available in Appendix F - Energy Generation & Storage Measures and Methodology.

GOAL EGS: A - SUPPORT ENERGY GENERATION AND STORAGE IN THE COMMUNITY

To expand the usage of renewable energy generation and storage technologies, it is critical to implement the right policy tools and educate the public about the benefits of these technologies.

MEASURE EGS: A1 - COMMUNITY CHOICE AGGREGATION

Community Choice Aggregation (CCA) allows cities and counties, to combine the electricity demand of customers in their jurisdictions and procure electricity for these customers through their own generation or through the market. Benefits of aggregation include increased local control over electricity rates, possible savings to the customer, and the option to use more renewable energy

The City plans to explore the Community Choice Aggregation as a tool to enhance the usage of Energy Generation technologies. Rancho Palos Verdes will explore the sub-strategy listed on table EGS: A1.

EGS: A1 Sub-strategies

EGS: A1.1	Investigate the feasibility of Community Choice Aggregation.

MEASURE EGS: A2 - SITING AND PERMITTING

To accelerate the implementation of renewable energy technologies, regulatory barriers need to be addressed to help ensure smooth deployment. Streamlining the siting and permitting process and reducing administrative burden to developers will help speed up the process of bringing these projects to reality.

The City will identify and develop measures to remove barriers for siting and permitting Renewable energy technologies including those listed on table EGS: A2.

EGS: A2 Sub-strategies

EGS: A2.1	Accelerate implementation of renewable and alternative energy based technology through permitting process (e.g. reduced permit fees, streamlined permit approval process) – City can identify and remove regulatory barriers or procedural barriers to installing alternative energy technologies in building and development codes, design guidelines, and zoning ordinances; and work with related agencies, such as fire, water, health and others that may have policies or requirements that adversely impact the development or use of renewable energy technologies.
EGS: A2.2	Encourage and support on-site installation and use of renewable and alternative energy generation systems for residential, commercial, institutional, and industrial uses.

MEASURE EGS: A3 - POLICIES AND ORDINANCES

Robust policies will help scale up the implementation of renewable energy technologies and will also make users more resilient to interruptions in power supply and price variations, while promoting the benefits of new local industries.

The City will explore policies for generating the electricity from renewable energy sources, including sub-strategy table EGS: A3.

EGS: A3 Sub-strategies

EGS: A3.1	Develop and adopt policies for generating energy from renewable and alternative energy sources such as solar power (includes PV and thermal), energy storage, microgrids, geothermal, biomass, and fuel cells.

MEASURE EGS: A4 - EDUCATION AND OUTREACH

Educating communities about the renewable energy generation sources and energy conservation is important to cause change in society towards a cleaner and greener future. Education and outreach strategies need to be catered to different stakeholder groups to address some of the key challenges facing the implementation of these technologies at the local level.

The City will work with different stakeholders and utilize different tools to create awareness towards renewable energy generation and storage including the sub-strategies listed in table EGS: A4.

EGS: A4 Sub-strategies

EGS: A4.1	Work with investor-owned utilities or CCAs and local, regional, and state partners to identify, implement, or promote financial tools to encourage on-site alternative and renewable energy generation projects.
EGS: A4.2	Update the City's website to include links to information for renewable and alternative energy rebates, incentives, and case studies.
EGS: A4.3	Promote community awareness to conserve energy in conjunction with using renewable and alternative energy.

MEASURE EGS: A5 - EXPLORE TECHNOLOGIES IN MUNICIPAL FACILITIES

Cities that utilize renewable energy and storage technologies in municipal facilities can help to increase energy capacity for municipal operations. These activities can also set an example for the community.

The City will work to explore renewable energy generation and storage options for municipal operations including the sub-strategy listed in table EGS: A5.

EGS: A5 Sub-strategies

EGS: A5.1	Explore renewable and alternative energy technologies – Explore renewable and alternative energy technologies including solar photovoltaics (PV), solar thermal, microgrids, energy storage, wind, geothermal, wave/tidal, and fuel cells to increase capacity for municipal operated and owned facilities and properties, and evaluate their suitability.

Implementation and Monitoring

The City's Emissions Reduction Action Plan (ERAP) is a policy-level document that guides the implementation of the climate action plan's GHG reduction measures. This chapter describes the implementation and monitoring steps for cities to reach or exceed their GHG reduction goals. Successful implementation and monitoring will depend on cooperation, innovation, and participation by the city, residents, businesses, utilities, and other local government agencies. The following sections outline key steps that the City could follow for the implementation and monitoring of its ERAP:

Step 1 - Administration and Staffing

To help ensure success, the City would implement internal administration and staffing to:

- Designate an Implementation Coordinator to oversee, direct, and coordinate implementation of the ERAP as well as monitoring and reporting of GHG reduction efforts.

The Implementation Coordinator would be responsible for the implementation of the ERAP, coordinating among all involved city departments, and recommending modifications and changes to the ERAP over time.

Step 2 - Financing

Financing, whether through public sources or private investment, is key to implementing many of the ERAP measures. A review of current (Nov. 2017) and potential funding sources was completed for the different strategies identified in this ERAP. The inclusion of a discussion of any of these funding sources or approaches does not imply eligibility or specific funding for any individual project. The City, however, alone or in partnership and collaboration with the SBCCOG or other local, regional, state, and federal agencies or utility, is encouraged to use the funding sources (listed in table 9) as a starting point to implement their selected sustainability measures.

Table 9: Funding Sources

Strategy	Federal Sources	State Sources	Local Sources
Accelerate the Market for Electric Vehicles	▪ Recreational Trails Program (for NEVs) ▪ Economic Development Administration (EDA) Grant ▪ Surface Transportation Block Grant Program (STBGP) (multi-modal complete streets) ▪ Transportation Investment Generating Economic Recovery (TIGER) Grant	▪ Infrastructure and Economic Development Bank - Infrastructure Revolving Fund Program ▪ Gasoline Taxes/Operations and Maintenance ▪ California Air Resource Board (CARB) ▪ California Energy Commission (CEC)	▪ Transportation/Mobility Improvement Programs (Measure M) ▪ Southern California Edison Charge Ready Program ▪ South Coast Air Quality Management District (SCAQMD) Programs
Adopt Active Transportation	▪ Surface Transportation Block Grant Program (STBGP) ▪ Economic Development Administration (EDA) Grant ▪ Recreational Trails Program (RTP) ▪ Safe Routes To School Program (SRTS)	▪ Infrastructure Revolving Fund Program ▪ Gasoline Taxes/Operations and Maintenance ▪ Caltrans ATP Grant	▪ Transportation/Mobility Improvement Programs (Measure M) ▪ Rule 20A Utility Set-asides ▪ Local Return on Measure M and Previous Initiatives ▪ Enhanced Infrastructure Financing District (EIFDs) ▪ Development impact fees
Integrate NOD	▪ Surface Transportation Block Grant Program (STBGP) ▪ Community Development Block Grant (CDBG) Program ▪ Economic Development Administration (EDA) Grant	▪ Infrastructure Revolving Fund Program ▪ Statewide Community Infrastructure Program ▪ Strategic Growth Council (SGC) Grant	▪ Transportation/Mobility Improvement Programs (Measure M) ▪ Rule 20A Utility Set-asides ▪ Community Facilities Districts (CFDs) ▪ Community Revitalization and Investment Areas (CRIAs) ▪ Local Return on Measure M and Previous Initiatives ▪ Landscape and lighting districts (LLDs)
Transit Network Infrastructure	▪ Surface Transportation Block Grant Program (STBGP)	▪ Low Carbon Transit Operations Program	▪ Los Angeles County Metropolitan Transportation Authority (Metro) ▪ Transportation/Mobility Improvement Programs (Measure M) ▪ Local Return on Measure M and Previous Initiatives ▪ Property and Business Improvement Districts (BIDs)
Land Use Element and Zoning Update (Affordable Housing)	▪ Community Development Block Grant (CDBG) Program	▪ Strategic Growth Council Transformative Climate Communities (TCC) ▪ Affordable Housing and Sustainable Communities (AHSC) Program	▪ Property and Business Improvement Districts (BIDs)
Energy Efficiency	▪ Solar America Cities Program ▪ Clean Cities program	▪ Property Assessed Clean Energy Financing ▪ California Solar Initiative ▪ Financing Authority for Resource Efficiency in California ▪ Self Generation Incentive Program	▪ Landscape and lighting districts (LLDs)
Waste, Greening, Energy Generation	▪ EPA's Water Finance Clearinghouse ▪ Economic Development Administration (EDA) Grant	▪ Low Carbon Transit Operations Program ▪ Reuse Assistance Grant Program	▪ Community Facilities Districts (CFDs) ▪ Development impact fees

Step 3 - Measure Implementation

Implementation involves incorporating GHG reduction measures into ongoing policy development, planning activities, and City operations. The first step will be to develop an implementation schedule for the reduction measures. As part of this process, City staff will focus on those reduction measures that are already underway or planned and have clear funding direction or strategies in place. Prioritizing for remaining measures will be based on the following factors:

- Availability of Funding
- Cost Effectiveness
- GHG Reduction Efficiency
- Level of City Control
- Time to Implement

Step 4 - Public Participation

Integral to the process of effective implementation is the engagement and education of City residents and businesses. Their involvement is essential to help the City reach its reduction goals, as much of the ERAP depends on a combination of state and local government efforts, public and private sources of finance as well as voluntary commitment, and creativity and participation of the community. Educational programs are an example of how the City can be a catalyst for public participation.

Step 5 - Monitoring

On-going monitoring and reporting of GHG reduction impacts and their cost effectiveness will enable City staff to make regular adjustments to the ERAP. The monitoring and implementation process should anticipate the possible need to adjust to unforeseen circumstances, incorporate innovative new technologies, and evolve with the advancing science of climate change. Measure-Tracking tools are ways for the City to monitor the reductions that result from the implementation of GHG reduction actions. The ERAP Implementation Coordinator could be tasked to maintain records of reduction measure implementation; additionally, as funding is available, they could insure that periodic updates to the emissions inventory are completed as a way to quantify GHG reductions. Conducting future inventories also allows the City to better assess their GHG emissions as better data and new methods for calculating reductions become available.

Additionally, the City can continue to receive assistance from the SBCCOG for their implementation and monitoring efforts.