



port of san diego | **climate action plan**
2013



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Available at www.portofsandiego.org	

This CAP is based on work supported through the San Diego Gas & Electric Local Government Partnership Program.



introduction: port of san diego climate action plan 2013

The San Diego Unified Port District (the Port) has developed a comprehensive Climate Action Plan (CAP) to protect and enhance its future success as a thriving, working port. It is based on stakeholder input and rigorous scientific data. The CAP serves as a guide for action, including a targeted set of greenhouse gas reduction policies and measures.

The Port is an economic engine for the region and an environmental steward for San Diego Bay. This CAP helps the Port grow and thrive sustainably by reducing the Port's operational costs, and minimizing the future costs of reacting to climate change through proactive, long-range planning, and aligning the Port with state goals and direction.



Earth's climate is always changing, beginning long before humans emerged. The most recent dramatic shift occurred at the end of the last Ice Age, roughly 20,000 years ago, when melting glaciers caused a slow migration of both animals and plants to different latitudes. Today, however, climate change is happening at a faster rate than at any other point in history, due in large part to human activity and increased carbon emissions.

The Climate Action Plan (CAP) developed by the San Diego Unified Port District (the Port) provides the framework for achieving its goals for the reduction of greenhouse gas (GHG) emissions.

As a trustee of public lands surrounding San Diego Bay, the Port is responsible for planning and preparing for future impacts of climate change on its environment. The CAP identifies policies and measures to reduce GHG emissions.

Port of San Diego Climate Action Plan Guiding Principles

The Port's CAP is a living plan, which means it will continue to evolve over time as determined by the Board of Port Commissioners. The ongoing development and implementation of the Port's CAP is guided by the following guiding principles and must be consistent with the overarching policies and considerations.

GHG Reduction Goals

The Port's Climate Action Plan contains a palette of potential GHG reduction policies and measures selected to help meet the Board's GHG reduction goals of:

- **10% less than 2006 levels by 2020**
- **25% less than 2006 levels by 2035**

The adoption of the Port's Climate Action Plan places the Port at the forefront of the San Diego region's climate planning efforts.



Guiding Principles

- Collaborate with member cities and stakeholders
- Ensure the CAP is integrated with the Port Master Plan and other Integrated Planning efforts
- Consider overall benefit to the economy and job creation
- Focus on data-driven results and cost-benefit analysis
- Policies should endure beyond 2020

Overarching Policies

Implementation of policies and measures will be subject to legal authority, budget and cost considerations, technological feasibility, and economic impacts to the region, the Port, and tenants as determined periodically by the Board of Port Commissioners.

Implementation of policies and measures will take into account existing local, state, and federal laws, regulations, and programs to avoid unnecessary duplication, minimize uncertainty, and maximize predictability.

Measures constitute a menu of options for achieving the Port's greenhouse gas reduction goals; the Port is not obligated to implement all measures. Listed and future new measures will be evaluated through the process established in BPC Policy 750.

Policies and Measures to Reduce Greenhouse Gas (GHG) Emissions

Reducing GHG emissions can slow the rate of climate change—thus reducing impacts. The Port's reduction measures include both what's required by state and federal regulations, and Port-specific reduction measures focused on the following:

Transportation and Land Use Planning

Supporting alternative-fueled technology and implementing management systems that increase the efficiency of transportation and reduce energy consumption.

Energy Conservation and Efficiency

Employing energy strategies in buildings and exterior spaces that save money on utility costs, reduce GHG emissions and provide other community benefits.

Water Conservation and Recycling

Conserving, treating and re-using water to minimize GHG emissions and conserve a scarce resource.

Alternative Energy Generation

Meeting energy demands through renewable energy generation.

Waste Reduction and Recycling

Promoting behavioral changes that encourage conserving resources, re-use and recycling.

Miscellaneous

Supporting other programs and outreach to reduce GHG emissions.

See Appendices D and E for more information on Setting Reduction Targets and Quantifying Greenhouse Gas Reduction Measures to Achieve Reduction Targets.



State of California Climate Action Plan Guidelines

The Port's Climate Action Plan is guided by state regulations designed to reduce GHG emissions and promote resiliency to the impacts of climate change.

- AB32, California's Global Warming Solutions Act of 2006, sets a statewide goal to reduce GHG emissions to 1990 levels by 2020.
- Executive Order S-3-05 extends statewide GHG emission reduction goals to 80% below 1990 levels by 2050.

The Port's Role

The Port was formed in 1962 to promote the maritime industries that stimulate our regional economic vitality, and to serve as a steward for San Diego Bay, managing its valuable social and environmental assets.

The Port encompasses portions of five member cities including San Diego, National City, Chula Vista, Imperial Beach and Coronado. The Port oversees two maritime cargo terminals, a cruise ship terminal, 20 public parks, protected wildlife habitat, the Harbor Police department, and tenant leases of more than 600 businesses around San Diego Bay, including recreational and commercial marinas, hotels, restaurants and industrial businesses.

Today, San Diego Bay supports a thriving maritime port and natural resource that help support an enviable quality of life. Achieving a balance among the many uses of the Bay requires a long-term comprehensive approach to natural resource management. As a trustee of public lands surrounding San Diego Bay, the Port should plan and prepare for future impacts to the environment.

Regional stakeholders are also addressing climate change issues in their own jurisdictions. All of the Port's five member cities are planning for the impacts of climate change. Federal agencies such as the Navy, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency also consider climate change a threat and have begun taking steps to address it.

Although the Port is ultimately responsible for adopting and implementing its CAP, developing it has been and must continue to be a collaborative effort. Its successful implementation requires teamwork across many Port departments and participation from Port tenants, their customers and stakeholders, the broader community, as well as city, county and resource agencies concerned with San Diego Bay.

The Green Port Program

The Port developed the Green Port Program to support the Green Port Policy approved by the Board of Port Commissioners in 2007. The goal is to achieve long-term environmental, societal and economic benefits through resource conservation, waste reduction and pollution prevention.

The Green Port Program unifies the Port's environmental sustainability goals in six key areas: energy, waste management, sustainable development, water, air and sustainable business practices.

This CAP supports the goals of the Green Port policy and program with a long-term vision to help the Port grow and thrive sustainably.

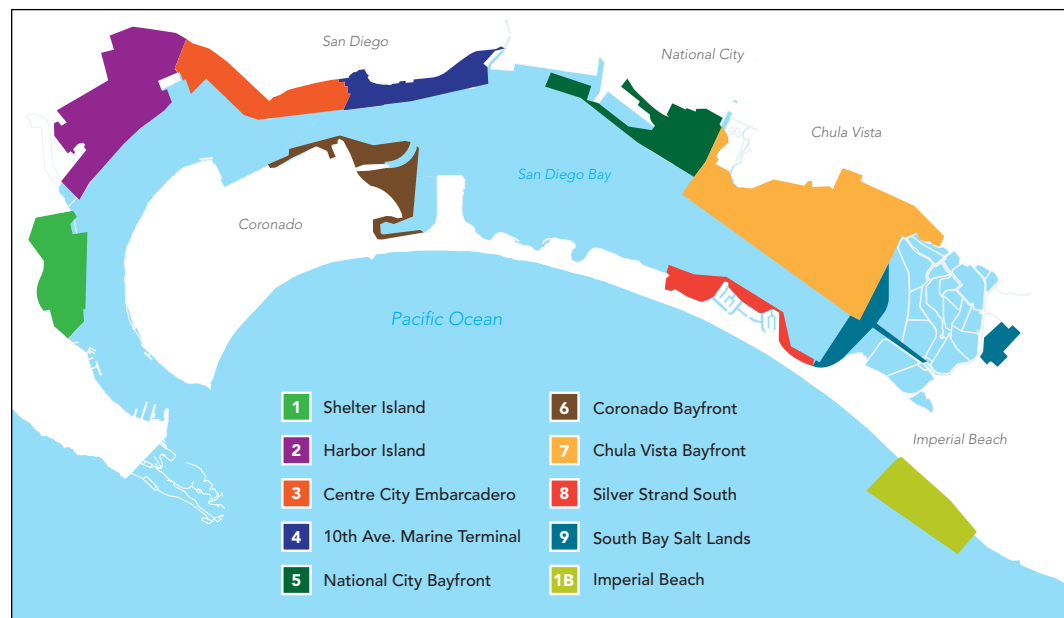


The Port's Master Plan

The Port Master Plan (PMP) provides a planning tool to guide future Port development, and to ensure that projects and developments within the Port are consistent with the California Coastal Act. The PMP contains the official planning policies, consistent with a general statewide purpose, and land and water use designations that guide physical development of the tidelands and submerged lands conveyed and granted in trust to the Port.

The CAP is designed to be a complementary planning and decision-support tool for the PMP. Projects can refer to the CAP, once adopted, to increase consistency in long-term planning. The GHG reduction policies and measures may be considered for each project.

THE PORT'S PLANNING DISTRICTS





GHG emissions overview: baseline and future

The first step toward reducing GHG emissions is estimating the baseline and future expected emissions. These estimates are categorized and analyzed according to both the Port-specific activity—such as recreational boating or lodging, and the general source or use that generated the emissions—such as energy, transportation, waste or water use (referred to as “sectors” in this Climate Action Plan).

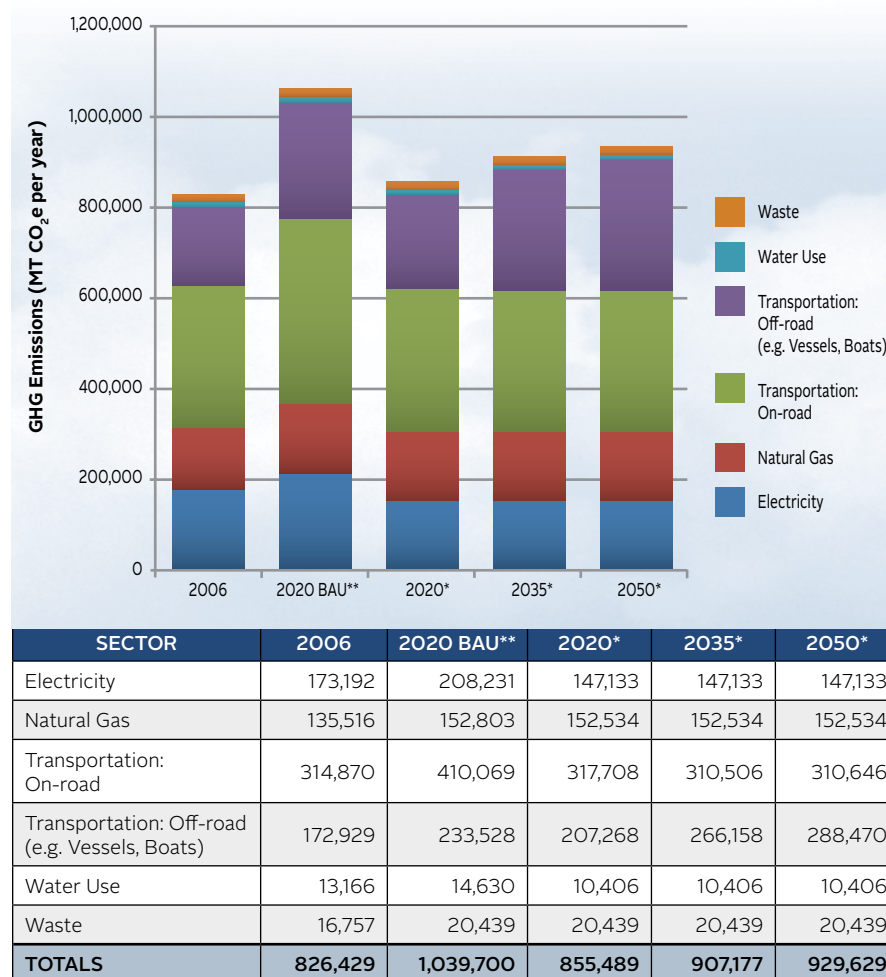
The Climate Action Plan establishes a baseline year of 2006 that includes emissions estimates from all tenants and activities at the Port. The 2020, 2035 and 2050 emissions are projected from the baseline by estimating the emissions impacts of future development projects and projected increases in cargo and cruise activity.

The baseline and projected emissions data provide benchmarks for monitoring the Port’s performance toward reaching its **GHG reduction goals of 10% less than 2006 baseline levels by 2020 and 25% less than 2006 baseline levels by 2035.**

Baseline and Future GHG Analysis

The summary tables below report emissions by Port-specific activities and general sources or sectors of emissions. The emission estimates for future years are scenarios because they include assumptions about the future. For example, the 2020 Business As Usual (2020 BAU) scenario assumes no new policies, plans, programs or regulations designed to reduce GHG emissions will be adopted or implemented between now and 2020. In some ways, the 2020 BAU is a worst-case scenario, because it doesn't include the expected reduction impacts from current state and federal regulations and policies. The 2020, 2035 and 2050 scenarios, on the other hand, do take into account the expected reduction impacts resulting from the federally mandated higher vehicle fuel efficiency standards and the state mandated increases in the percentage of renewable energy provided by public utility companies.

CURRENT AND PROJECTED EMISSIONS BY SECTOR



All emissions are expressed as Metric Tons of CO₂ equivalents per year or MT CO₂e/yr.

* Includes reduction impacts of known state and federal regulation.

** Business As Usual scenario assumes no new policies, plans, programs or regulations designed to reduce GHG emissions.



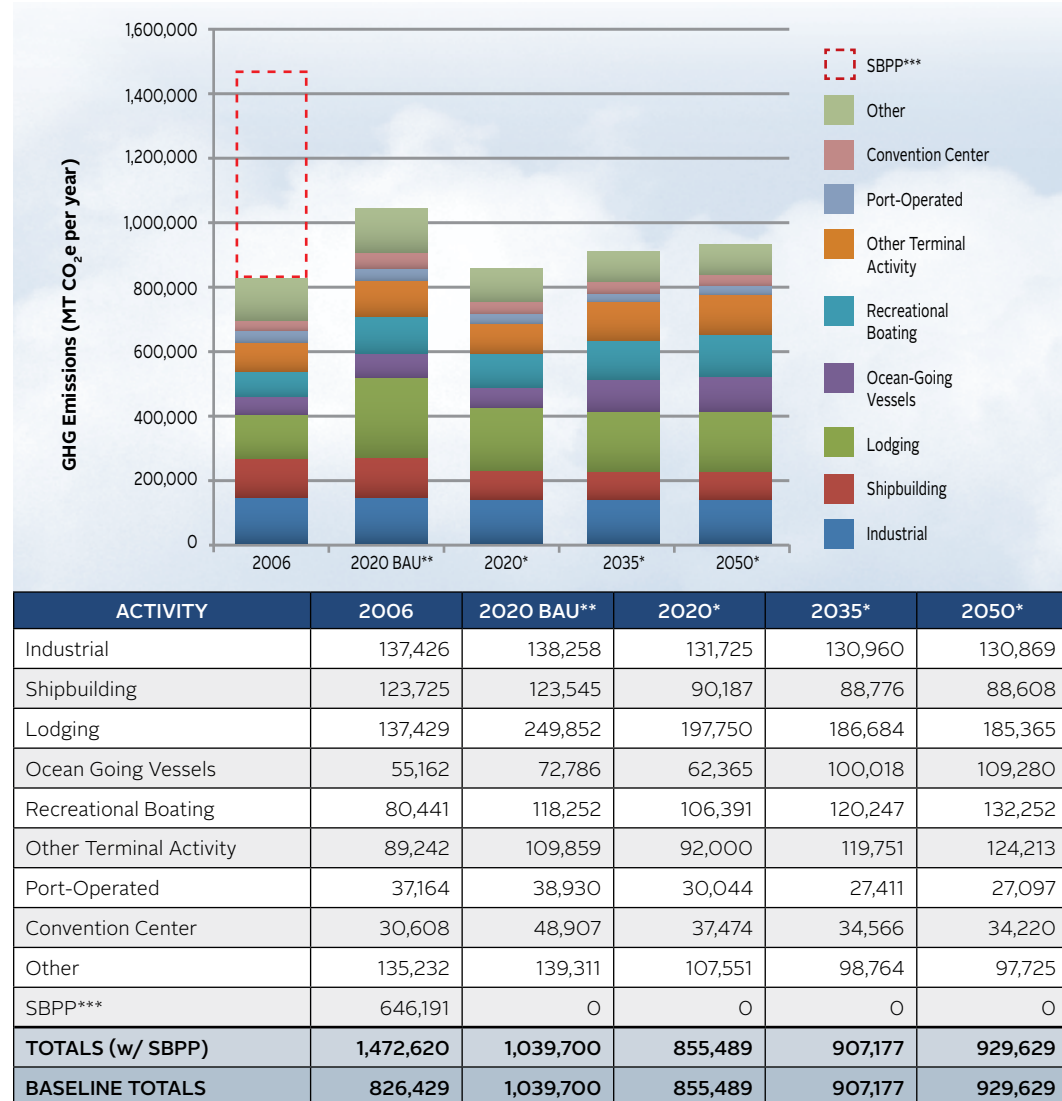
South Bay Power Plant (SBPP) Demolition

The SBPP Demolition and Remediation Project is a joint project of the Port of San Diego and the City of Chula Vista. The Port acquired the plant from San Diego Gas & Electric® in 1999, specifically to remove it from the bay front. Dynegy South Bay, Inc., the current tenant, began decommissioning it in January 2011.

Because the decision to decommission SBPP was made prior to the start of the Climate Action Plan process, its emissions are not included in the baseline (see dashed line in the chart).

The emissions by sector table shows both electricity and on-road transportation emissions decreasing significantly from the 2020 BAU scenario due to the major GHG reduction impacts of the previously mentioned state and federal regulations.

CURRENT AND PROJECTED EMISSIONS BY ACTIVITY



All emissions are expressed as Metric Tons of CO₂ equivalents per year or MT CO₂e/yr.

* Includes reduction impacts of known state and federal regulation.

** Business As Usual scenario assumes no new policies, plans, programs or regulations designed to reduce GHG emissions.

*** See South Bay Power Plant (SBPP) Demolition sidebar on previous page.

The table above shows anticipated GHG increases in emissions from general activities at the Port, such as lodging, ocean-going vessels and recreational boating, due to new commercial development projects and projected increases in cargo and cruise activity.

Even after including the major future year GHG reductions resulting from state and federal regulations, the Port's GHG emissions are expected to rise from the 2006 baseline of 826,429 to 855,489 (3.5%) to 907,177 (9.8%) to 929,629 (12.5%) for 2020, 2035 and 2050, respectively.

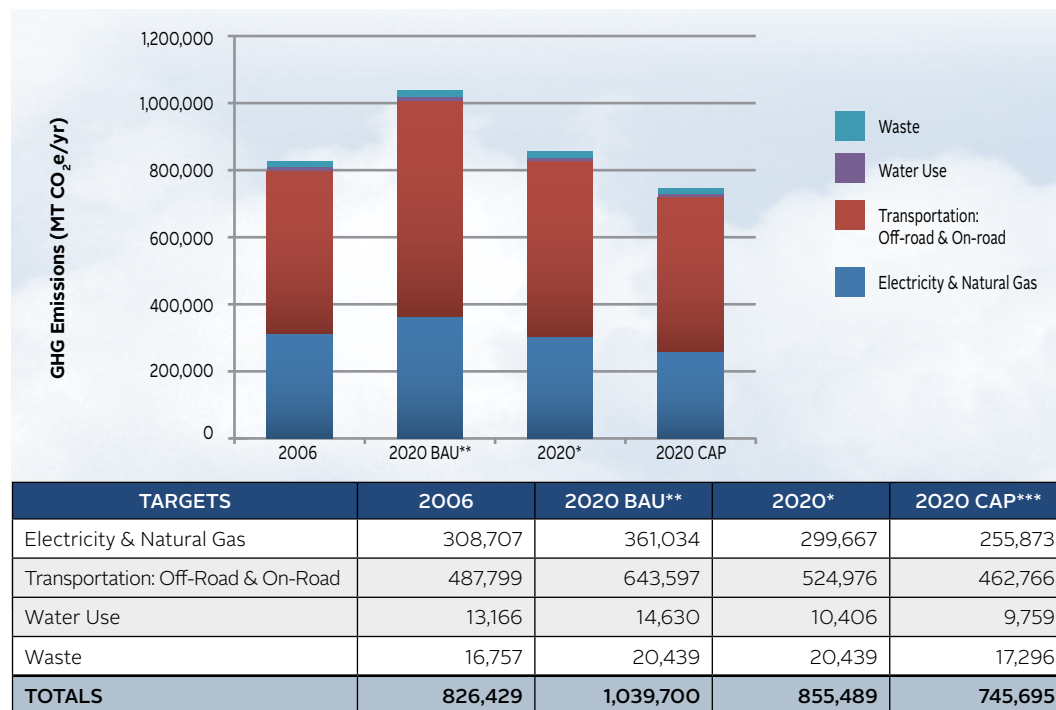
See Appendix B for Greenhouse Gas Inventory Documentation.

GHG Emissions Reduction Targets

To meet the Port's reduction goal of 10% less than the 2006 baseline by 2020, the Port's CAP includes a wide range of GHG reduction measures that have the potential to reduce GHG emissions from the projected 2020 scenario total of 855,489 to 745,695 MT CO₂e/yr.

Given that more than 61% of the 2020 emissions are from the transportation sector and 35% from the electricity and natural gas sector, the CAP implementation strategy must focus on both quick wins and other major measures in these sectors in order to achieve the Port's reduction goals.

GHG REDUCTION TARGETS - 2020 CLIMATE ACTION PLAN



All emissions are expressed as Metric Tons of CO₂ equivalents per year or MT CO₂e/yr.

* Includes reduction impacts of known state and federal regulation.

** Business As Usual scenario assumes no new policies, plans, programs or regulations designed to reduce GHG emissions.

*** This column does not include the small 35 MT CO₂e/yr GHG reduction resulting from measures that increase carbon capture and sequestration on Port owned lands.

The process and methods for Quantifying GHG Reduction Measures to Achieve Reduction Targets is discussed in detail in Appendix E.

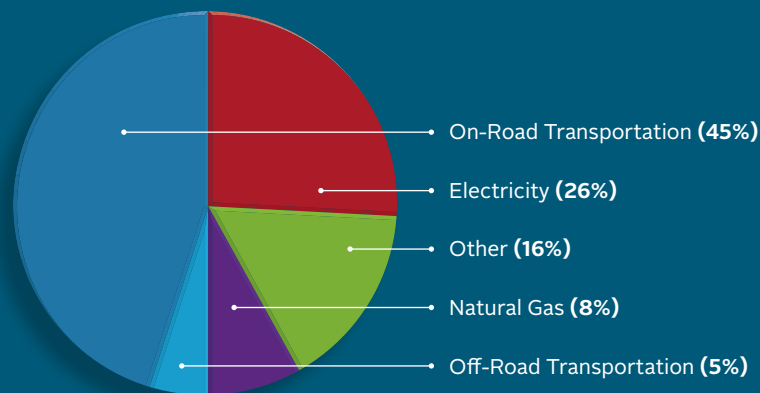
Comparison to the County of San Diego's 2020 Emissions

The Port's overall 2020 emissions by sector profile is quite different from most other cities and counties including the County of San Diego.

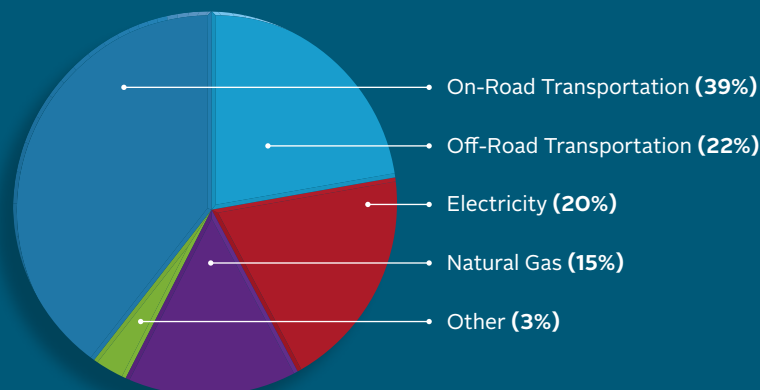
For example, the Port's proportion of off-road transportation emissions are much higher than that of the County of San Diego (22% versus 5% of the total) due primarily to the emissions generated by recreational boating and ocean-going vessels. In contrast, the Port's proportion of on-road transportation emissions is less than the County's (39% versus 45% of the total). The result is the Port faces a greater challenge meeting their reduction targets, because federal regulations aimed at vehicle (on-road) emissions do not reduce the Port's transportation emissions as much as they do for cities and counties.

Percentage of GHG Emissions by Sector

COUNTY OF SAN DIEGO



PORT OF SAN DIEGO



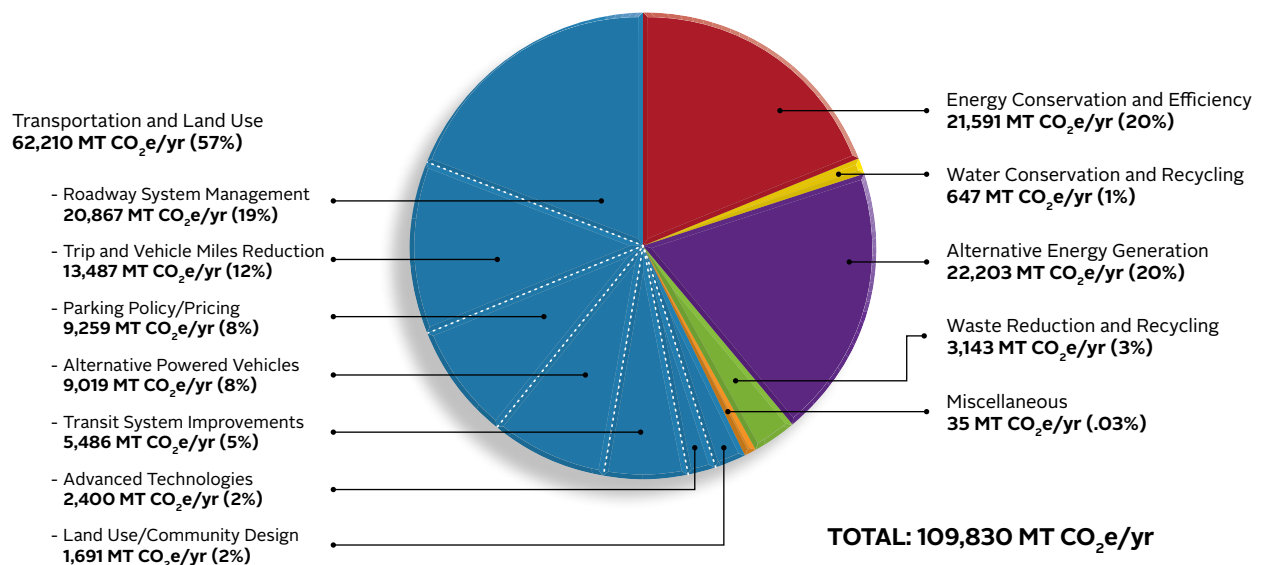
GHG Emissions Reduction Sources

The final step in developing the CAP is evaluating the possible GHG reductions resulting from the implementation of the CAP. Using accepted processes and methods, it is estimated that 109,830 MT CO₂e/yr in potential GHG reductions can be achieved by implementing the key measures included in this CAP. If the CAP measures are implemented and the estimated reductions are achieved, the Port will meet its GHG reduction goal of 10% less than the 2006 baseline levels by 2020.

The potential reduction estimates below are based on a rigorous analysis of the possible measures included in the CAP. The analysis shows that roughly 59% of the total reductions will come from three major sources: Energy Conservation and Efficiency (20%); Alternative Energy Generation (20%); and, Roadway System Management (19%), a sub-section of the Transportation and Land Use category.

The accuracy of the reduction estimates are dependent upon of the available data, tools and estimation methods; thus, these estimates are for planning purposes only. Once the Port begins monitoring and tracking implementation of the CAP, the reduction source estimates below may be modified to more accurately reflect both the actual impact of specific measures and the overall performance toward the Port's 2020 and 2035 reduction goals.

POTENTIAL 2020 GHG REDUCTION SOURCES

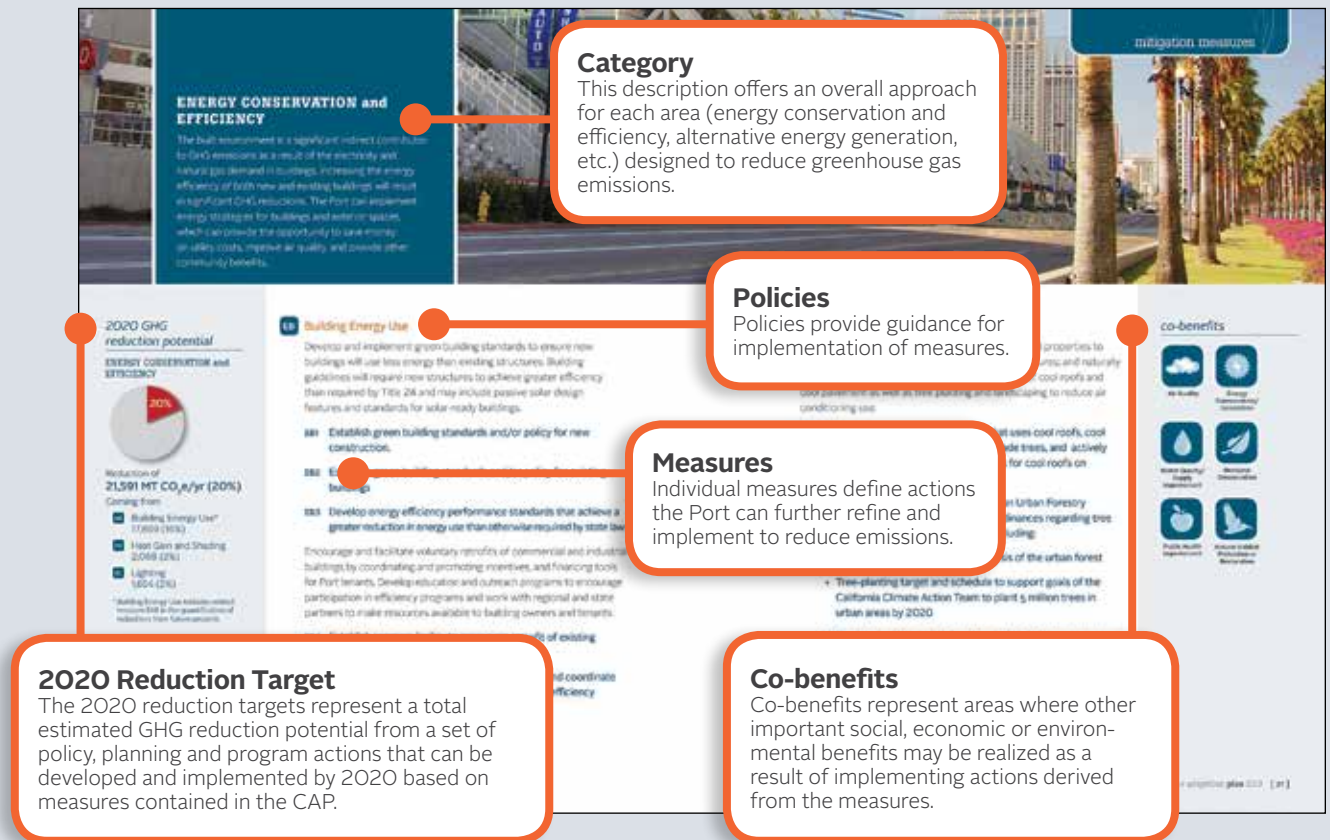


The process and methods for Quantifying GHG Reduction Measures to Achieve Reduction Targets is consistent with the fourth California Environmental Quality Act (CEQA) Guideline element for climate action planning and is described in detail in Appendix E.

The Climate Action Plan's Relationship to CEQA is described in Appendix A.



How to Read the Measure Pages



Co-benefits Description

The Port has identified 11 areas where advantages or gains may accrue beyond reductions in GHG emissions. For instance, increasing the use of alternative energy sources could also result in better air quality as well as improved public health.



Air Quality



Economy and Jobs



Energy Conservation/Generation



Public Health Improvement



Resource Conservation



Natural Habitat Protection or Restoration



Water Quality/Supply Improvement



Adaptation Strategy Support



Land Use Plan Implementation



Regional Plan Implementation



Transportation System Improvement

| policies and measures

The policies and GHG reduction measures included in the Port's CAP were drawn from over a dozen Climate Action Plans and GHG emission reduction guidelines completed by local governments and agencies in California, including those for other ports and airports. Policies will provide guidance as measures are further developed and implemented. The list of potential measures was modified and expanded based on Port specific projects and programs. Port staff then evaluated all of the potential measures using Port specific criteria, and input from the Board of Port Commissioners and stakeholders.

The implementation actions and the reduction impacts of these measures will continue to be refined and developed working together with stakeholders. Measures in this CAP will be further developed and approved by the Board of Port Commissioners prior to implementation. All new measures will be evaluated by the Board of Port Commissioners based on established Board policy.

The remainder of this CAP focuses on the near term 2020 GHG reductions. The Port's implementation timeline includes plans to revisit the 2035 goals and update the CAP.

See Appendices C and E, Reduction Measures and Quantifying Greenhouse Gas Reduction Measure to Achieve Reduction Targets respectively, for details regarding the evaluation and analysis of the Port's reduction measures.

TRANSPORTATION and LAND USE

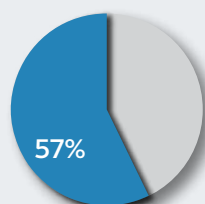
The Port is home to many diverse land uses and modes of transportation that directly and indirectly contribute to GHG emissions. Recreational boating, on-road vehicles (cars and trucks) and off-road equipment (such as cargo handling equipment and ships) account for 35% of the Port's 2006 baseline GHG emissions. Lodging, restaurants, marina attractions, trains and other heavy-duty vehicles also contribute to GHG emissions.

Combining land use and transportation strategies can also lead to a broad set of co-benefits, and improve the daily experience of Port employees and visitors.



2020 GHG reduction potential

TRANSPORTATION and LAND USE



Reduction of
62,210 MT CO₂e/yr (57%)

Coming from

- TA** Alternative Powered Vehicles
9,019 (8%)
- TR** Roadway System Management
20,867 (19%)
- TL** Land Use/Community Design
1,691 (2%)
- TP** Parking Policy/Pricing
9,259 (8%)
- TT** Transit System Improvements
5,486 (5%)
- TV** Trip and Vehicle Miles Reduction*
13,487 (12%)
- TE** Advanced Technologies
2,400 (2%)

* Trip and Vehicle Miles Reduction includes related measures TL1 and TL2.

TA + **TE** Alternative Powered Vehicles and Vessels, and Advanced Technologies

Implement programs to increase the use of alternative powered vehicles and vessels, advanced technologies, and best practices. Strategies may include: low-emission fleet vehicles; shore power for ocean-going vessels and tugs; new technologies related to electrification of docks and marinas; alternatives to on-dock container and cargo transport systems; advanced energy efficiencies for vehicles, rail locomotives and ocean going vessels; and, reduction of redundant vehicle traffic from waste removal.

- TA1** Support and promote the use of alternate fueled, electric or hybrid Port owned vehicles and vessels (also includes cargo handling equipment, terminal and stationary equipment).
- TA2** Support and promote non-Port owned vehicles and vessels to achieve the lowest emissions possible, using a mix of alternative fueled, electric or hybrid technology.
- TA3** Implement emissions reduction strategies at loading docks through electrification of docks or idling-reduction systems for use while at loading docks.
- TA4** Electrification of marinas.
- TA5** Develop and encourage use of shore power for ocean going vessels.
- TA6** Develop and encourage use of shore power for tugs.
- TA7** Promote the use of catenary/induction-driven trucks for transporting cargo between the Port terminals and intermodal rail yards, distribution centers, and warehouses.

Catenary/Induction-driven trucks are vehicles that are powered by electricity, either through an electric cabling system or wirelessly.



- TA8** Promote the use of alternative container transport systems such as Maglev to eliminate diesel-powered rail and truck transport to near-dock rail facilities.
- Maglev is a method of propulsion that uses magnetic levitation to propel vehicles with magnets rather than with wheels, axles, and bearing.*
- TE1** Use of technologies and strategies to reduce fuel consumption, such as installation of electronic engine and fuel management systems, to reduce fuel consumption and operate cleaner vessel engines.
- TE2** Implement Vessel Speed Reduction for ocean going vessels.
- TE3** Implement anti-idling restrictions for locomotives.
- TE4** Promote best vehicle maintenance and operational best practices for Harbor Craft, including routine engine monitoring.
- TE5** Promote the application of advanced hull and propeller design in new ships and air cavity systems to reduce hull resistance.
- TE6** Promote the use of flywheel technology for non-electric cranes.
- TE7** Support and promote the use of advanced technologies for rail locomotives: advanced technology diesel-fuel injectors; Tier 2 or Tier 3 locomotive engines; gen-set engines; and, hybrid or LNG locomotives.

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co-benefits



Air Quality



Energy Conservation/
Generation



Resource Conservation



Water Quality/
Supply Improvement



Land Use Plan Implementation



Regional Plan Implementation



Public Health Improvement



Adaptation Strategy Support



Transportation System Improvement

TRANSPORTATION and LAND USE

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- TE8* Solar power generators or alternative power generation systems for ocean going vessels to supply onboard electrical demand and propulsion.
- TE9* Evaluate the feasibility of using hydraulic/electric cranes at the marine terminals and industrial waterfront businesses to reduce diesel emissions.
- TE10* Explore the consolidation of waste haulers servicing businesses on tidelands.

**Indicates a new measure added during the CAP review process and after the analysis and quantification of GHG reduction estimates was concluded. Additional GHG reduction estimates from this new measure are not included in the overall estimated reduction potential.*

TR Roadway System Management

Implement roadway management systems to improve mobility at maritime facilities and on areas under the Port's jurisdiction. Measures may include enforcing idling laws for commercial vehicles and encouraging rail use in-lieu of trucks.

- TR1 Implement traffic and roadway management strategies to improve mobility and efficiency, and reduce associated emissions on general roadways within Port tidelands.
- TR2 Implement traffic and roadway management strategies to improve mobility and efficiency, and reduce associated emissions at maritime facilities.
- TR3 Vehicle Idling: Enforce state idling laws for commercial vehicles, including delivery and construction vehicles.
- TR4 Encourage rail freight utilization over trucks to reduce vehicle miles traveled.

TL + TT Land Use/Community Design and Transit

Encourage partner agencies to build connections to public and private transit systems to improve access, and encourage expanding and increasing the efficiency of transportation networks, including rail freight and other modes of transportation, and increase opportunities for walking and bicycling, and restrict drive-through uses.

- TL1 Promote greater linkage between land uses and transit, as well as other modes of transportation.
- TL2 Increase bicycling and walking opportunities (safe infrastructure to priority destinations) as an alternative to driving.

- TL3 Drive-Through Uses: Restrict the locations of drive-through businesses to reduce the impacts of vehicle idling on adjacent uses, such as housing, schools, and health care facilities.
- TT1 Encourage expansion of the transit network; both passenger transit and rail freight transportation.
- TT2 Encourage increased transit performance (e.g., frequency and speed).
- TT3 Encourage implementation of transit access improvements.

TP + TV Parking Policy/Pricing and Trip and Vehicle Miles Reduction

Increase the use of parking management programs. Implement a trip-reduction program for Port staff, and encourage employer-sponsored transportation demand management programs by Port tenants.

- TP1 Adopt a comprehensive parking policy to unbundle the true cost of providing parking. This policy will increase economic fairness while it reduces the frequency of people choosing to drive alone to work.
- TP2 Event Parking Policies. Use the approach outlined in “A Plan to Efficiently and Conveniently Unbundle Car Parking Costs” found at:

www.sandiego.gov/environmental-services/pdf/sustainable/parkingcosts.pdf

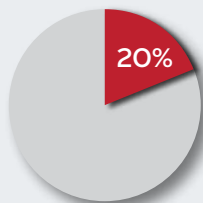
 Car parking should be operated as a business for the people of driving age that attend the events.
- TV1 Implement trip reduction programs, such as: ride sharing, telecommuting and alternative work schedules, commute trip reduction marketing, and employer-sponsored vanpool/shuttle.

ENERGY CONSERVATION and EFFICIENCY

The built environment is a significant indirect contributor to GHG emissions as a result of the electricity and natural gas demand in buildings. Increasing the energy efficiency of both new and existing buildings will result in significant GHG reductions. The Port can implement energy strategies for buildings and exterior spaces, which can provide the opportunity to save money on utility costs, improve air quality, and provide other community benefits.

2020 GHG reduction potential

ENERGY CONSERVATION and EFFICIENCY



Reduction of
21,591 MT CO₂e/yr (20%)

Coming from

- EB** Building Energy Use*
17,869 (16%)
- EH** Heat Gain and Shading
2,068 (2%)
- EL** Lighting
1,654 (2%)

*Building Energy Use includes related measure EH1.

EB Building Energy Use

Implement green building standards in conjunction with member cities' building codes to ensure new and existing buildings optimize new technologies and energy efficiencies. Building standards may require greater efficiency measures than required by Title 24 (California Building Standards Code) and other efficient design features to use less energy.

- EB1** Establish green building standards and/or policy for new construction.
- EB2** Establish green building standards and/or policy for existing buildings.
- EB3** Develop energy efficiency performance standards that achieve a greater reduction in energy use than otherwise required by state law.

Increase retrofits of commercial and industrial buildings and stationary equipment by lease provision requirements and other mechanisms, promoting incentives and financing tools for Port tenants. Develop education and outreach programs to facilitate participation in energy efficiency, funding, and technical assistance programs for building owners and tenants.

- EB4** Establish program/policy to encourage retrofit of existing buildings to reduce energy use.
- EB5** Energy Efficiency Funding: Increase awareness and coordinate use of incentives for tenants to invest in energy efficiency upgrades.
- EB6** Replace light fixtures in non-Port facilities with lower energy bulbs such as fluorescent, LEDs, or CFLs.



- EB7*** Enforce the requirements of AB1103 requiring owners of non-residential buildings in California to measure and report to the California Energy Commission the building's energy use via U.S. EPA Energy Star Portfolio Manager and disclose the information to prospective buyers, leases, and lenders. The Port will also require public disclosure.

**Indicates a new measure added during the CAP review process and after the analysis and quantification of GHG reduction estimates was concluded. Additional GHG reduction estimates from this new measure are not included in the overall estimated reduction potential.*

EH Heat Gain and Shading

Adopt a Heat Island Reduction Plan for new development within Port tidelands and Port Operations to reduce urban heat sources and increase shade, and lower building and outdoor temperatures. Establish guidelines for the use of cool roofs and cool pavement, as well as native tree planting and landscaping to reduce energy consumption.

- EH1** Adopt a Heat Island Reduction Plan that uses cool roofs, cool pavements, and strategically placed shade trees, and actively inspect and enforce state requirements for cool roofs on non-residential re-roofing projects.
- EH2** Urban Forestry Management: Develop an Urban Forestry Program to consolidate policies and ordinances regarding tree planting, maintenance, and removal, including:
- Comprehensive inventory and analysis of the urban forest.
 - Tree-planting target and schedule to support goals of the California Climate Action Team to plant 5 million trees in urban areas by 2020.

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co-benefits



Air Quality



Energy
Conservation/
Generation



Water Quality/
Supply
Improvement



Resource
Conservation



Public Health
Improvement



Natural Habitat
Protection or
Restoration

ENERGY CONSERVATION and EFFICIENCY

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- Establish guidelines for tree planting (deciduous vs. evergreen, low-VOC-producing trees, drought-tolerant native trees and vegetation).

EH3 Evaluate existing landscaping and options to convert reflective and impervious surfaces to landscaping, and install or replace vegetation with drought-tolerant, low-maintenance native species that can also provide shade and reduce heat island effects.

EL Lighting

Replace traffic lights and interior and exterior light fixtures with lower-energy bulbs; and implement performance standards for lighting to reduce energy consumption on Port buildings, facilities and right-of-ways.

- EL1** Develop and implement performance standards for exterior lighting of commercial and industrial buildings and parking lots, which include minimum and maximum lighting levels while providing a safe environment.
- EL2** Require the replacement of traffic lights with LED traffic lights.
- EL3** Install occupancy sensors (Vending Misers) at soda machines.
- EL4** Replace light fixtures in Port-owned facilities with lower energy bulbs such as fluorescent, LEDs, or CFLs.

WATER CONSERVATION and RECYCLING

The movement, treatment, heating and cooling of water all require energy (both natural gas and electricity consumption) and result in GHG emissions. Nearly 20% of the state's energy use is consumed in the transportation and use of water. Shipbuilding, industrial tenants and lodging account for a large portion of water use. By conserving, treating and re-using water, Port users can minimize emissions associated with this energy and conserve a scarce resource.

WR Water Recycling

Promote criteria and standards to permit the safe and effective use of gray water and rainwater (on-site water recycling) and encourage revisions to requirements that might prevent the use of such systems.

WR1 Recycled water use. Establish programs and policies to increase the capture and use of recycled water.

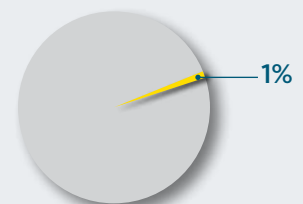
WC Water Conservation

Adopt programs to reduce water for both indoor and outdoor use. Increase conservation strategies, including: water-efficient landscape ordinances; other financial incentives for conservation; and, require implementation of water conservation measures as part of green building standards.

WC1 Adopt a Water Conservation Strategy.

2020 GHG reduction potential

WATER CONSERVATION and RECYCLING



Reduction of
647 MT CO₂e/yr (1%)

Coming from

WR Water Recycling
Not Estimated

WC Water Conservation
647 (1%)

co-benefits



Energy
Conservation/
Generation



Adaptation
Strategy
Support



Resource
Conservation



ALTERNATIVE ENERGY GENERATION

Shifting from traditional, GHG-emitting power sources (fossil fuels) to clean, renewable energy can contribute significantly to meeting the Port's GHG reduction targets. The Port can help meet energy demands through on-site, distributed renewable energy generation. Policies, programs and technologies that support this type of energy generation will also make Port tenants and users more resilient to price variations and interruptions in power supply, while promoting the economic benefits of new, local industries.



2020 GHG reduction potential

ALTERNATIVE ENERGY GENERATION



Reduction of
22,203 MT CO₂e/yr (20%)

Coming from

EA Alternative Energy Generation
22,203 (20%)

ME Smart Grid
Not Estimated

EA Alternative Energy Generation

Adopt programs intended to increase renewable energy generation from sources, such as solar power, wind power, methane recovery, wave power, and other emerging technologies that benefit Port tidelands. Establish progressively more ambitious production goals for the years 2020, 2035 and 2050.

- EA1** Implement on-site renewable energy generation policy for 2020 (solar power, wind power, methane recovery, wave power, etc.)
- EA2** Implement on-site renewable energy generation policy for 2035 (solar power, wind power, methane recovery, wave power, etc.).
- EA3** Implement on-site renewable energy generation policy for by 2050 (solar power, wind power, methane recovery, wave power, etc.).

Identify and remove regulatory, policy, and code barriers to on-site renewable energy production while ensuring the safety and protection of all Port users. Identify ways to reduce costs to permit alternative energy generation projects.

- EA4** Establish policies and programs that facilitate the siting of new renewable energy generation.
- EA5** Remove Barriers: Identify and remove or reduce barriers to renewable energy production, including:
 - Review and revise building and development codes, design guidelines, and zoning ordinances to remove barriers.



- 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.

Work with energy producers and distributors, and local, regional, and state partners to implement and/or promote financial tools to encourage alternative energy generation projects that benefit Port tidelands. Conduct outreach to Port tenants and developers to inform them of opportunities for energy generation and available tools.

EA6 Pursue economic incentives and creative financing for renewable energy projects (such as a Solar Cooperative Purchasing Policy), as well as other support for tenants or developers seeking funding for such projects.

Explore technologies including co-generation, methane recovery, energy storage and fuel cell generation and distribution, and evaluate their suitability.

- EA7** Promote co-generation (i.e., combined heat and power system) projects.
- EA8** Encourage the implementation of methane recovery systems that generate energy for use at landfills used by tenants.
- EA9** Reduce costs to permit alternative energy generation projects.
- EA10** Develop clean, fuel cell distributed generation within Port Tidelands.

continued on next page

co-benefits



Air Quality



Economy and Jobs



Resource Conservation



Energy Conservation/Generation

ALTERNATIVE ENERGY GENERATION

continued from previous page

- EA11* Implement a program to install technologies for generating energy from renewable sources such as solar power, wind power, and/or wave power on Port Tidelands. Establish progressively more ambitious production goals for the years 2020, 2035 and 2050.

**Indicates a new measure added during the CAP review process and after the analysis and quantification of GHG reduction estimates was concluded. Additional GHG reduction estimates from this new measure are not included in the overall estimated reduction potential.*

ME Smart Grid

Create electricity distribution networks within the Port using smart grid and micro-grid technology that allows for active management and automatic adjustments to changing conditions based on electricity demand and sources of supply.

- ME1 Develop smart grid and energy districts for Port operations and tenants.

WASTE REDUCTION and RECYCLING

Waste-related GHG emissions result from transporting the waste to landfills and from the material as it breaks down in landfills. Main contributors to waste generation include lodging, restaurants, and Port-operated warehouse activities. The Port can reduce waste-related GHG emissions by promoting changes in behavior that encourage conserving resources, re-use and recycling.



SW Waste Reduction and Recycling

Implement programs to reduce waste from Port and tenant operations. Conduct outreach to Port tenants and coordinate assistance for waste diversion.

SW1 Increase the diversion of solid waste from landfill disposal.

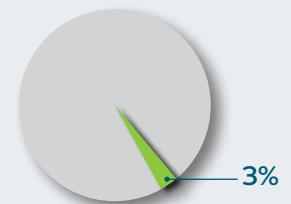
Establish and enforce a construction waste-recycling program for all demolition and construction projects. Identify major waste generating uses, and provide technical and financial support to implement waste reduction strategies, and expand public outreach and education about waste management and recycling.

SW2 Adopt a Construction and Demolition Recycling Ordinance.

SW3 Develop policy to reduce the generation of solid waste.

2020 GHG reduction potential

WASTE REDUCTION and RECYCLING



Reduction of
3,143 MT CO₂e/yr (3%)

Coming from

SW Waste Reduction/Recycling
3,143 (3%)

co-benefits



Natural Habitat
Protection or
Restoration



Water Quality/
Supply
Improvement



Public Health
Improvement



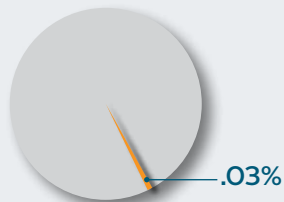
Resource
Conservation

MISCELLANEOUS

These measures range from practical and easy to implement and low-cost GHG initiatives, such as increasing public awareness and developing a Green Business Certification Program, to high investment measures that leverage emerging technology, such as smart grid networks and carbon capture and injection.

2020 GHG reduction potential

MISCELLANEOUS



Reduction of
35 MT CO₂e/yr (.03%)

Coming from

MP MP Programs and Outreach
Not Estimated

MC MC Carbon Capture and
Sequestration
35 (.03%)

co-benefits



Air Quality



Energy
Conservation/
Generation



Resource
Conservation

MP Programs and Outreach

Develop programs and strategies to reduce greenhouse gas emissions and support climate stabilization while increasing tenant and public awareness, improving the long-term economic vitality of Port tenants and Port operations, and protecting adjacent community health.

Develop and implement requirements for industrial tenants to inventory operational GHG emissions not otherwise addressed in buildings or transportation sources.

Address impacts of climate change and greenhouse gas emissions on residential communities adjacent to the Port by identifying emissions near impacted communities and partnering with adjacent communities on reduction strategies.

- MP1** Increase public awareness of climate change and climate protection challenges, and support community reductions of GHG emissions through coordinated, creative public education and outreach, and recognition of achievements.
- MP2** Develop a Green Business Certification Program.
- MP3** Ensure the Port's GHG reduction efforts and Port Master Plan are aligned with, support, and enhance any regional plans that have been developed consistent with state guidance to achieve reductions in GHG emissions.
- MP4** Require Port and encourage Port tenants to purchase goods and services that embody or create fewer GHG emissions.
- MP5** Pursue off-site GHG reduction strategies.
- MP6** Develop a Green or Sustainable Lease standard.
- MP7*** Require through lease conditions, reduction measures, and other mechanisms building and operational energy and water audits



and a plan to implement cost-effective recommendations on a schedule consistent with the size of the tenant and the length of the lease.

- MP8* Develop and implement requirements for industrial tenants to inventory greenhouse gas emissions from stationary and non-transportation industrial operations and schedule to reduce those emissions in accordance with CARB, state, and Port goals.
- MP9* Coordinate with industrial tenants to achieve early reductions of those greenhouse gas emissions that are regulated under California's AB32 Cap and Trade Program.
- MP10* Set project-level thresholds of significance, in tons of CO₂/yr, for use in the California Environmental Quality Act (CEQA) review process.
- MP11* The League of American Bicyclist's Traffic Skills 101 Class: Subsidize this class for all those that might drive to the Port, for whatever reason. The cost should be paid for all who graduate from the class with a passing grade.

**Indicates a new measure added during the CAP review process and after the analysis and quantification of GHG reduction estimates was concluded. Additional GHG reduction estimates from this new measure are not included in the overall estimated reduction potential.*

MC Carbon Capture and Sequestration

Evaluate and pursue methods and techniques that actively sequester or capture carbon and are consistent with environmental and infrastructure protection. This may include conservation of open spaces and prioritizing projects that sequester carbon, such as wildlife habitat areas or living shorelines.

- MC1 Carbon Sequestration. Develop program to conserve open space and preserve and promote the ability of such resources to remove carbon from the atmosphere. Identify and prioritize specific projects within the Port's jurisdiction that sequester carbon and provide other amenities, including wildlife habitat. Report on amount of sequestered carbon.
- MC2 Active carbon capture and injection.



| implementation, tracking + monitoring

The Port's CAP is a policy-level document that guides the implementation of the CAP's GHG reduction measures.

To evaluate the CAP's GHG measures, the Port will conduct performance assessments of each implemented reduction measure and track and monitor overall progress toward the CAP's 2020 and 2035 GHG reduction goals.



Implementation Framework

Implementation involves incorporating the GHG reduction measures into the Port's ongoing policy development, planning activities, and business operations. There are four major elements of this approach.

- Develop an implementation framework
- Establish an implementation timeline
- Describe how the Port will evaluate performance and report progress
- Monitor and update the CAP over time

When the CAP is approved by the Port's Board of Port Commissioners, Port staff will focus implementation efforts on those reduction measures that are already underway or planned and have clear funding direction or strategies in place. These reduction measures represent “low-hanging fruit” or “quick wins” and are prioritized to help meet the imminent 2020 GHG reduction targets.

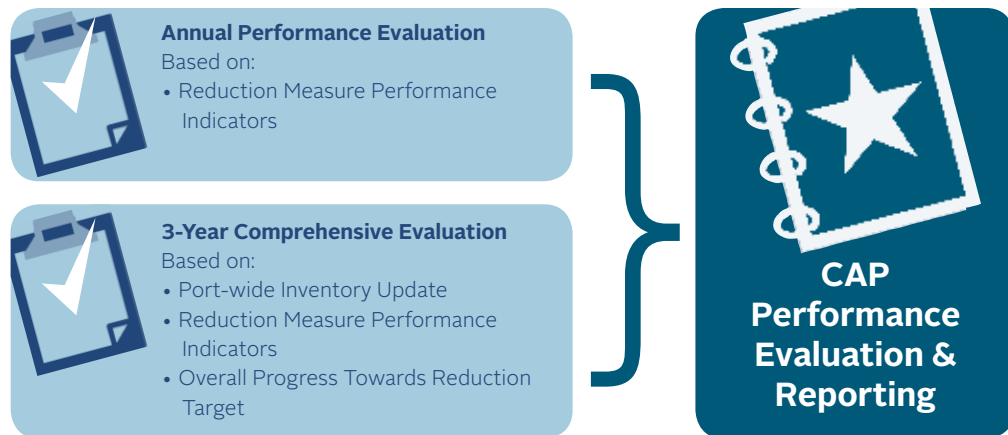
The measures will be evaluated against an overall set of criteria to help prioritize implementation. Examples of the criteria include cost effectiveness, GHG reduction potential, current or potential funding available, and potential for reaching near-term goals. These criteria and guidelines for implementation of the CAP are addressed in Board of Port Commissioners Policy 750.

In areas where the Port shares jurisdiction or management interests with other regulatory entities, the Port can work collaboratively with co-managers to implement and monitor the Port's CAP.

See Appendix F: Implementation and Monitoring Plan or Board of Commissioners Policy 750 for more implementation plan details.

Tracking and Monitoring

Ongoing monitoring and reporting of GHG reduction impacts and their cost effectiveness will enable staff and the Board of Port Commissioners to make regular adjustments to the CAP.



The CAP establishes an iterative process of implementation, evaluation, and strategic updating.

This iterative monitoring process will ensure the CAP remains current and effective at reducing GHG emissions. In brief, the implementation process anticipates the possible need to adjust to unforeseen circumstances, incorporate innovative new technologies, and evolve with the advancing science of climate change.

The GHG reduction measure performance tracking process includes annual and triennial assessments. These assessments may result in modifications or updates to the CAP due to changes to the Port-wide GHG projections, changes in climate policy or GHG regulations, development of new GHG reduction strategies or technologies, or Port operational changes.

All measures in this CAP will be further developed and approved by the Board of Port Commissioners prior to implementation. All new policies and measures will be evaluated by the Board of Port Commissioners based on established Board policy.

See Appendix F: Implementation and Monitoring Plan or Board of Commissioners Policy 750 for more implementation plan details.

GHG Reduction Implementation Timeline

2012	2013	2014	2015	2016
CAP Process and Analysis begun in 2010 completed. Goals selected by Board of Port Commissioners	Board of Port Commissioners approve CAP	Progress Report	3-Year Update: Port-wide GHG inventory update (for 2014 emissions). CAP Evaluation and Progress Report	Progress Report

The implementation timeline is subject to revision or modification if Port staff or the Board of Port Commissioners determines that reductions are not on track to meet the Port's long-term goals as specified in the CAP or new information becomes available. Future updates to the implementation timeline will address Port actions between 2021, 2035 and 2050.





Who's Involved?

Work began on the CAP in September 2010. Stakeholders have been involved through presentations and discussions with the Port's Climate and Energy Work Group (Work Group), a subcommittee of the Port's Environmental Advisory Committee which serves as an advisory group to the Port's Board of Commissioners and provides key feedback and direction.

Stakeholder participation has been essential to the development of the CAP. The Work Group met regularly and included participation from the Port Tenants Association, The San Diego Foundation, local environmental advocacy groups, and Port Member Cities. Port staff has also made several presentations to the Port's Environmental Advisory Committee and the Board of Port Commissioners.

Prior to completion of this draft CAP, staff held several public meetings to introduce the project to the broader community and engage additional public feedback.

See Appendix G: Public Process for more information on stakeholder and public participation.

What's Next

With the adoption of this CAP by the Port's Board of Commissioners, staff can work with stakeholders to develop specific actions aligned with this CAP's policies and reduction measures while also improving the Port's resiliency to climate change risks.

With the adoption and implementation of the Port's Climate Action Plan, the Port continues to serve as a model for other ports and port communities across the U.S.



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