

Overview of proposed actions to reduce greenhouse gas emissions in Carlsbad

To support California's ambitious emissions reduction goals, in 2015, the City of Carlsbad was one of the first cities in the county to adopt a Climate Action Plan that outlined strategies and policies to reduce greenhouse gas emissions in a measurable way.

Climate action plans are comprehensive roadmaps that outline the specific activities that a government agency will undertake to reduce greenhouse gas emissions. Climate action plans generally focus on those activities that can achieve the relatively greatest emission reductions in the most cost-effective manner. These plans typically include:

- Specific city-sponsored initiatives and actions that the city controls directly, such as operations at city buildings and the types of cars in the city's fleet.
- Policies to direct, guide or influence actions of third parties, such as a requirement to recycle food scraps and energy efficiency standards for new building construction.

State laws

California's Assembly Bill 32, known as the Global Warming Solutions Act of 2006, was the first program in the country to take a comprehensive, long-term approach to addressing climate change.

Senate Bill 32, passed in 2016, expands upon Assembly Bill 32 and requires a reduction in greenhouse gas emissions of at least 40% below the 1990 levels by 2030 and, via **Assembly Bill 1279**, passed in 2022, a long-term requirement to reduce greenhouse gas emissions at least 85% below 1990 levels by 2045.

Why is the city updating its Climate Action Plan?

Since 2015, state targets have been updated, and we have more current information about the amount of GHG emissions generated by different sources in Carlsbad. This is called our "GHG inventory."

What are greenhouse gas emissions?

Gases that trap heat in the atmosphere are often called “greenhouse gases,” or GHGs. Burning fossil fuels generate greenhouse gas emissions, like carbon dioxide and methane, which contribute to climate change. The major GHGs that are being emitted into the atmosphere include:

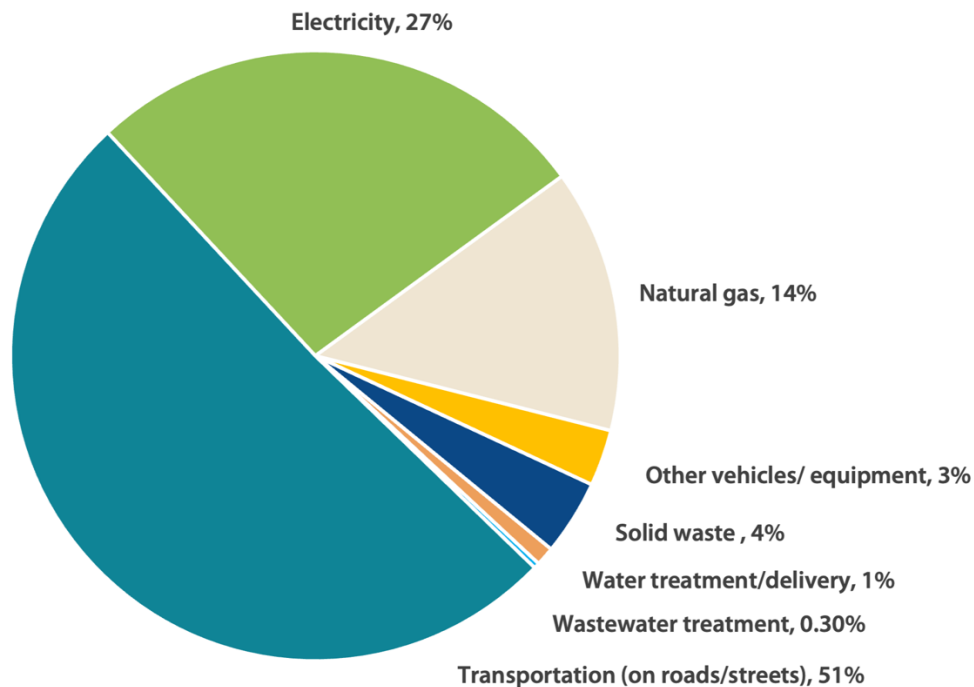
Carbon dioxide (CO₂)
Methane (CH₄)
Nitrous oxide (N₂O)
Hydrofluorocarbons (HFCs)
Perfluorocarbons (PFCs)
Sulfur hexafluoride (SF₆)
Nitrogen trifluoride (NF₃)

How are GHGs generated?

Greenhouse gas emissions typically come from the following actions:

- The operation of city offices, community centers, libraries and other buildings
- Energy to operate streetlights and traffic signals
- Energy required to pump water to homes and businesses
- Energy required to pump wastewater from homes and businesses to the treatment plant, plus the energy to treat and dispose of the wastewater
- Vehicles, such as fire trucks, police cars, utility trucks and cars
- Equipment like bulldozers, skip loaders and excavators
- Power generation for homes and businesses
- Energy needed to collect and process trash, recycling, and organics

Sources of GHGs in Carlsbad



Energy Policy Initiatives Center, University of San Diego, 2023

Climate Action Plan



Baseline inventory



Adopt target



Forecast emissions



Select strategies

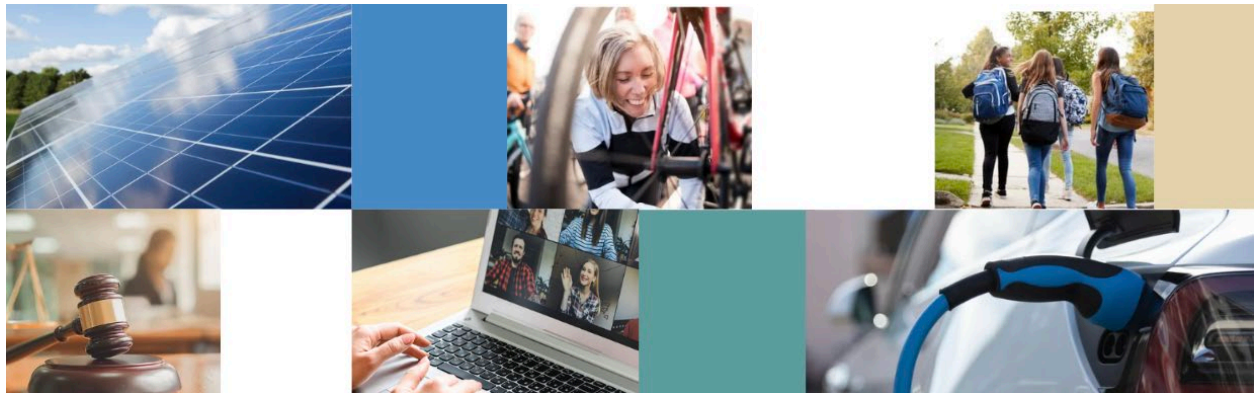


Funding & implementation



Monitor, track progress

Proposed actions



In early 2022, the city asked the public to shape the Climate Action Plan Update by providing input on environmental sustainability needs and priorities. This public input was used to help develop the proposed actions to reduce greenhouse gas emissions. These actions are described on the following pages, including:

- Projected GHG reductions
- Measures of success
- Data to be used
- Related benefits
- Timeframe
- Equity considerations

Wastewater/Wastewater System Improvements



Actions

Continue making improvements to the City of Carlsbad’s collection system, including but not limited to upgrading lift stations

Supporting actions

Update the city’s Wastewater Master Plan

Explore system improvements based on the updated Wastewater Master Plan



GHG reduction

2035 59 metric tons

2045 0 metric tons



How will we measure success?

Energy usage at wastewater facilities

Reduce wastewater collection energy intensity 10% by 2035 and supply lift stations with 100% renewable/carbon free electricity from Clean Energy Alliance

Data to be used

Wastewater energy/usage data



What other benefits do these actions provide?

Improved water quality in our oceans and lagoons.



Timeframe

Ongoing



Equity considerations

Promote rebate or incentive programs (e.g., multi-family, low-income)

Water System Improvements



Actions

Continue making improvements to the Carlsbad Municipal Water District's potable and recycled water systems, including but not limited to upgrading recycled water pumps, expanding use of recycled water, and using renewable energy to power facilities

Supporting actions

Continue to explore local water supply options and assess feasibility and cost to benefit ratio

Assess feasibility and seek funding for renewable energy and/or storage at Carlsbad Municipal Water District facilities



GHG reduction

2035 1,516 metric tons

2045 1,583 metric tons



How will we measure success?

Water usage/energy data

Achieve the active and passive water conservation described in 2020 UWMP (2,295 AF within CMWD service area and 2,981 AF within the entire city by 2035)

Supply recycled water pump stations with 100% renewable/carbon free electricity from Clean Energy Alliance

Data to be used

Water usage/energy data; water demand projections



What other benefits do these actions provide?

Improved water quality in our oceans and lagoons.



Timeframe

Ongoing



Equity considerations

Promote rebate or incentive programs (e.g., multi-family, low-income)

Renewable Energy at Municipal Facilities



Actions

Increase percentage of renewable electricity purchased for existing city facilities and street and safety lighting to 100%

Have 100% renewable electricity be the default for new city facilities

Eliminate natural gas use from city facilities

Supporting actions

Coordinate with the city's energy suppliers on the purchase of 100% renewable electricity (e.g., "Green Impact" level from Clean Energy Alliance)

Continue certifying city facilities in the Carlsbad Green Business Program to incorporate as many sustainable activities as possible

Leverage local and regional partnerships and seek funding to support identified energy efficiency upgrades

Upgrade all street and safety lighting to more energy efficient options



GHG reduction

2035 396 metric tons

2045 386 metric tons



How will we measure success?

Clean Energy Alliance opt-up date (estimated 2025); natural gas phase-out date

Data to be used

of facilities on 100% renewable electricity

of street and safety lights on 100% renewable electricity



What other benefits do these actions provide?

Reduced energy usage



Timeframe

Long-term



Equity considerations

Establish additional city facilities as "cool zones" using social, economic, and environmental data

Support high-road green job growth

Community Choice Energy



Actions

Continue the participation in the Clean Energy Alliance Community Choice Energy program

Supporting actions

Explore the purchase of renewable energy credits if Community Choice Energy program is not reaching 2035 goal

Support promotion of Clean Energy Alliance’s customer programs and encourage CEA customers to participate

Set 100% renewable electricity (e.g., “Green Impact”) as the default option for customers



GHG reduction

2035 17,110 metric tons

2045 0 metric tons



How will we measure success?

CEA participation rates; # of customers at 100%

100% renewable electricity (CEA Green Impact) as the default CEA option

Data to be used

CEA participation rates

of customers at 100% renewable

of customers that opt down below 100% renewable



What other benefits do these actions provide?

Reduced energy usage



Timeframe

Ongoing



Equity considerations

Promote Clean Energy Alliance’s customer programs

Nonresidential Building Energy Efficiency and Renewable Energy



Actions

Continue implementing existing building energy efficiency and water heater ordinances (adopted in 2019)

Update city's building code, or "reach code", with energy efficiency and renewable energy requirements in non-residential buildings (new construction + additions/alterations over a certain threshold)

*GHG emissions reduced by 2035 and 2045 only assumes implementation of Primary Action 1

Supporting actions

Analyze feasibility of eligible sites for renewable energy infrastructure across all city facilities, leveraging any preexisting analyses that are applicable

Assess feasibility of installing solar panels over parking spots at city facilities

Seek grant funding for installation of renewable energy infrastructure at existing and new city facilities (e.g., solar, battery storage, microgrids)



GHG reduction

2035 770 metric tons
2045 1,296 metric tons



How will we measure success?

Reach code update adopted

of buildings that reach code update would apply to

Data to be used

and size of projects installed

Energy usage of projects (e.g., kWh)

Building permit data applicable to reach code (# of buildings, sq. ft. of building spaces, etc.)



What other benefits do these actions provide?

Reduced energy usage



Timeframe

Ongoing



Equity considerations

Support high-road green job growth

Residential Building Energy Efficiency and Renewable Energy



Actions

Continue implementing existing building energy efficiency and water heater ordinances (adopted in 2019)

Update city's building code, or "reach code", with energy efficiency and renewable energy requirements in residential buildings (new construction + additions / alterations over a certain threshold)

Supporting actions

Explore updating the Home Energy Score Assessment Program

Leverage Clean Energy Alliance and SDG&E customer programs, or other similar programs

Explore pilot programs and incentives to educate residents on energy efficiency and renewable energy options for new and existing buildings



GHG reduction

2035 3,212 metric tons

2045 3,710 metric tons



How will we measure success?

Reach code update adopted

of buildings (single-family and multi-family homes) and # of water heaters that reach code update would apply to

Data to be used

Building permit data applicable to reach code



What other benefits do these actions provide?

Reduced energy usage



Timeframe

Ongoing



Equity considerations

Explore new pilot phase for Home Energy Score Assessment Program to provide free scores to low-income, multi-family, seniors, etc.

Support high-road green job growth

Design new pilot programs or incentives to target low-income, multifamily, seniors, etc.

Building Energy Benchmarking



Actions

Develop, adopt, and implement a building energy benchmarking ordinance

Supporting actions

Prepare a building stock analysis

Explore options and best practices for requiring existing commercial and residential buildings of a certain size to submit energy data annually

Conduct education and outreach to building owners and the public regarding new requirements



GHG reduction

2035 4,308 metric tons

2045 7,358 metric tons



How will we measure success?

of buildings within ordinance requirements

Building square footage within ordinance requirements

Data to be used

Benchmarking data submitted via Portfolio Manager



What other benefits do these actions provide?

Reduced energy usage



Timeframe

Medium-term



Equity considerations

Design program to be “equity first”, leveraging existing resources from other jurisdictions (e.g., City of Seattle, City of Denver, City of Minneapolis)

Decarbonize Existing Buildings



Actions

Reduce energy usage in existing residential buildings, particularly existing residential buildings not covered by any reach code requirements

Supporting actions

Explore updating the Home Energy Score Assessment Program

Leverage Clean Energy Alliance and SDG&E customer programs, or other similar programs

Seek external funding to launch and/or leverage existing pilot programs and incentives to support existing building decarbonization (e.g., appliance exchange, weatherization, solar PV installation, battery storage)

Leverage building stock analysis (prepared for E-5) to target existing buildings



GHG reduction

2035 22,356 metric tons

2045 44,305 metric tons



How will we measure success?

Reduce 30% natural gas use from existing buildings (equivalent to electrifying 12,000 homes, or approximately 25% of the housing units in 2045)

Data to be used

of homes participating in programs; # of homes fully or partially electrified; reduction in natural gas use at homes participating in programs; residential energy usage data from utility providers



What other benefits do these actions provide?

Reduced energy use; improved air quality; improved public health; increased local green jobs



Timeframe

Long-term



Equity considerations

Target outreach and incentives for multifamily, low-income, seniors, etc.; explore new pilot phase for Home Energy Score Assessment Program to provide free scores to low-income, multi-family, seniors, etc.

Solid Waste and Organic Waste Diversion



Actions

Reduce waste disposal to 4.2 pounds per person per day (or the equivalent of a 75% diversion rate) by 2035 and thereafter

Divert 75% organic waste (85% from residential and 15% from commercial) by 2035 and thereafter

Supporting actions

Research ordinance for requirement of a percentage of disposal for organic waste

Encourage maximum organics diversion from local businesses

Establish a Construction & Demolition diversion program

Maximize edible food recovery

Establish a program for permitted haulers for proper diversion of all waste streams

Continue implementing existing Sustainable Materials Management systems and ordinances citywide, including at city facilities and events

Continue implementing existing compost and mulch giveaway programs; explore launching new giveaway programs that target specific users

Update the city's sustainable purchasing policy to include regulatory requirements for sustainable procurement

Pursue vendor contracts to help implement diversion goals and monitor compliance



GHG reduction

2035 31,776 metric tons

2045 37,040 metric tons



How will we measure success?

75% diverted solid waste; 75% diverted organic waste

Data to be used

Disposal of solid waste; tons of edible food recovered; disposal of organic waste



What other benefits do these actions provide?

Reduced waste; increased local green jobs



Timeframe

Ongoing



Equity considerations

Outreach and incentive/rebate programs for multi-family, low-income, seniors, etc.

Traffic Calming & Optimization



Actions

Continue optimizing traffic signals within the city, adjusting as needed as traffic volumes and conditions change, and coordinating along major corridors

Install roundabouts or traffic circles when feasible, utilizing the city's engineering standard for intersection control

Supporting actions

Leverage the Sustainable Mobility Plan and Intersection Control Evaluation engineering standards to determine the location of new roundabouts and traffic circles



GHG reduction

2035 1,334 metric tons

2045 746 metric tons



How will we measure success?

of roundabouts and traffic circles; # of traffic signals optimized

10 roundabouts or traffic circles by 2035

Traffic signals optimized at 20 intersections by 2035

Data to be used

of roundabouts and traffic circles; # of traffic signals optimized



What other benefits do these actions provide?

Reduced waste; increased local green jobs



Timeframe

Ongoing



Equity considerations

Layer social, economic, and environmental data to assess where improvements go

Transportation Demand Management Ordinance



Actions

Continue implementing and enforcing existing Transportation Demand Management ordinance mandating TDM improvements and strategies for non-residential development

Update TDM ordinance to modify existing threshold for compliance (e.g., reducing Average Daily Trips threshold) as well as streamlining of other reporting requirements, as appropriate, by 2045

Supporting actions

Continue surveying businesses, pursuant to the TDM ordinance, to monitor implementation and track compliance

Update TDM strategies as new technology emerges

Educate commuters on alternative commute choices and resources available



GHG reduction

2035 3,254 metric tons
2045 8,533 metric tons



How will we measure success?

Current TDM ordinance metric (40% alternative mode share for new development and 30% for existing development by 2035)

Date ordinance updated

Data to be used

Mode shift for commuters based on TDM surveys; # of businesses involved; updates to TDM Handbook

of employees of the businesses (new development, existing buildings/tenant improvements)



What other benefits do these actions provide?

Improved air quality; reduced



Timeframe

Ongoing



Equity considerations

Explore creating incentives for implementing TDM plan strategies for community-based organizations

Safe Routes to School



Actions

Continue implementing a Safe Routes to School program to encourage walking and biking to school

Supporting actions

Leverage the city's Sustainable Mobility Plan to determine location-specific improvements

Seek funding to launch Safe Routes to Schools programs at additional school sites

Leverage the Sustainable Mobility Plan to conduct Safe Routes to School-related education and outreach activities at schools throughout the city



GHG reduction

2035 70 metric tons
2045 39 metric tons



How will we measure success?

Mode share at schools with Safe Routes to Schools programs

of students walk or bike to school at schools with Safe Routes to Schools programs

Data to be used

Mode share counts at program sites; # of students walking or biking to school at program sites



What other benefits do these actions provide?

Enhanced safety; improved public safety



Timeframe

Ongoing



Equity considerations

Layer social, economic, and environmental data to assess where improvements go

Bikeway System Improvements



Actions

Construct 7.9 added miles of bike lanes

Improve 61.2 miles of Class II bike lanes to Class II buffered bike lanes

Continue other bikeway system improvements, as available

Supporting actions

Leverage the city's Sustainable Mobility Plan to determine location of bikeway system improvements and secure bike parking and/or storage

Explore launch of a citywide bikeshare program, such as the City of Encinitas's program

Evaluate the city's Supportive Bicycle Infrastructure, such as adding new bicycle parking at highly used coastal destinations, bike repair stations, and additional bike-related amenities



GHG reduction

2035 566 metric tons

2045 324 metric tons



How will we measure success?

Miles of added bike lanes installed by class; existing bike lanes improved by class

Data to be used

Active Transportation monitoring report for mode share counts; amount of bike lane installed and improved



What other benefits do these actions provide?

Enhanced safety, reduced traffic congestion, improved access to low-cost transportation options, improved public health, improved air quality



Timeframe

Ongoing



Equity considerations

Layer social, economic, and environmental data to assess where improvements go

Pedestrian System Improvements



Actions

Add 60.5 miles of sidewalk

Supporting actions

Utilize the city's Sustainable Mobility Plan and Multimodal Traffic Impact Fee to identify suitable locations for pedestrian system improvements, focusing on creating safer and more user-friendly infrastructure to facilitate ease of use for pedestrians



GHG reduction

2035 547 metric tons

2045 307 metric tons



How will we measure success?

Miles of sidewalk installed; miles of sidewalk improved

Data to be used

Amount of sidewalk installed; amount of sidewalk improved



What other benefits do these actions provide?

Enhanced safety, improved public health, reduced traffic congestion, improved access to low-cost transportation options, enhanced community character, improved air quality



Timeframe

Ongoing



Equity considerations

Layer social, economic, and environmental data to assess where improvements go

Local Transportation Improvements



Actions

Explore local transportation improvements to provide sustainable on-demand, flexible fleet transit and first mile last-mile solutions

Supporting actions

Leverage existing regional transportation plans (e.g., North County Comprehensive Multimodal Corridor Plan) to add or update improvements to the transportation system within Carlsbad

Leverage the Multimodal Transportation Impact Fee for implementation of local transportation improvements

Coordinate with regional and local agencies and partners on influencing transportation improvements throughout the region and within Carlsbad



GHG reduction

2035 N/A metric tons

2045 N/A metric tons



How will we measure success?

Information from pending MTIF update

Data to be used

Ridership/usage data once local improvements are launched; TBID Circuit program data; AT Monitoring report; annual GMP monitoring program for vehicle traffic volumes



What other benefits do these actions provide?

Improved public health, improved access to low-cost transportation options, improved community character, improved air quality



Timeframe

N/A



Equity considerations

Layer social, economic, and environmental data to assess where improvements go

Municipal Transportation Demand Management Program



Actions

Continue implementing existing telecommute program for eligible city staff

Supporting actions

Establish a comprehensive Transportation Demand Management program for city staff to provide resources and incentives for alternative commutes, such as a carpool matching program for city staff



GHG reduction

2035 92 metric tons

2045 51 metric tons



How will we measure success?

Alternative commute rates; distance traveled

Data to be used

Telecommuting data; other TDM program participation data, if launched; travel distance between home and work for staff who telecommute



What other benefits do these actions provide?

Improved air quality, reduced traffic congestion, improved public health



Timeframe

Ongoing



Equity considerations

N/A

Increase Public Zero Emission Infrastructure



Actions

Increase the number of zero emission miles traveled within the city by installing and incentivizing public zero emission vehicle and bicycle infrastructure

Supporting actions

Seek external funding and/or partnerships for installation of zero emission vehicle and bicycle infrastructure (e.g., Clean Energy Alliance customer programs)

Explore creation of incentive programs for new construction and existing buildings to install zero emission vehicle and bicycle infrastructure beyond building code requirements

Continue education and outreach on zero emission vehicle options and rebates

Update existing Electric Vehicle Siting Plan to incorporate additional sites for zero emission vehicle and bicycle infrastructure, as well as new technologies, expanded zero emission vehicle types, and best practices

Explore employee purchase programs to encourage workplace charging for city staff



GHG reduction

2035 N/A (supporting Advanced Clean Cars II) metric tons
2045 N/A (supporting Advanced Clean Cars II) metric tons



How will we measure success?

of charging stations installed

Data to be used

kWH distributed from public-facing chargers; DMV/CVRP data on # of ZEVs purchased/licensed citywide; # of charging stations installed



What other benefits do these actions provide?

Improved air quality



Timeframe

Ongoing



Equity considerations

Prioritize installation using social, economic, and environmental data

Launch and/or promote incentive or rebate programs to install zero-emission charging infrastructure and/or purchase zero-emission vehicles

Zero Emission City Fleet



Actions

Continue transition and expansion of the city’s zero emission fleet
Install zero emission charging infrastructure to support fleet conversion needs

Supporting actions

Establish city fleet regulations for idling
Update fleet conversion plan to include updates to technology, legislation, and other best practices
Research technology options and purchase technology to sustain city fleet operations during emergencies
Transition all passenger fleet vehicle purchases after FY 2022-23 to be electric vehicles, with the exception of public safety vehicle purchases, which will be electric where feasible
Update city policies to encourage use of zero emission vehicles wherever feasible



GHG reduction

2035 1,059 metric tons
2045 592 metric tons



How will we measure success?

Fleet vehicle purchase policies established; # of fleet vehicles transition to zero-emission; total % of fleet that is zero emission

100% of fleet light-duty vehicles and trucks to be zero emission; 100% of fleet heavy duty vehicles to use renewable diesel

Data to be used

of zero-emission fleet vehicles; petroleum fuel reduction; kWh chargers from fleet zero emission charging station



What other benefits do these actions provide?

Improved air quality, improved public health



Timeframe

Ongoing



Equity considerations

N/A

Parking Management Strategies



Actions

Reduce vehicle miles traveled per capita citywide through parking management strategies

Supporting actions

Implement and update city's parking management strategies (e.g., Parking Study and Management Plan, Village and Barrio Master Plan) to encourage alternative modes of transportation throughout the city



GHG reduction

2035 N/A metric tons
2045 N/A metric tons



How will we measure success?

Information from pending Parking Study and Management Plan update

Data to be used

VMT per capita



What other benefits do these actions provide?

Improved air quality, improved public health



Timeframe

Long-term



Equity considerations

Layer social, economic, and environmental data to assess where improvements go

Convert Gas-Powered Leaf Blowers



Actions

Develop, adopt, and implement an ordinance prohibiting the use of gas-powered leaf blowers

Supporting actions

Leverage existing State and regional resources to promote trade-in of existing gas-powered leaf blowers or other similar incentives

Conduct outreach regarding the new requirements



GHG reduction

2035 396 metric tons

2045 386 metric tons



How will we measure success?

Ordinance adopted

Reduce 100% emissions from gas-powered leaf blowers by 2035 and thereafter

Data to be used

Data on # of calls for public usage; # of leaf blowers converted in city equipment



What other benefits do these actions provide?

Reduced energy use, improved public health, improved air quality



Timeframe

Short-term



Equity considerations

Launch and/or promote incentive program for trading out leaf-blowers

Increase Renewable or Alternative Fuel Construction Equipment



Actions

Develop, adopt, and implement an ordinance requiring new developments and significant land moving and construction projects to use electric powered or alternatively fueled construction equipment that reduces 50% of emissions from project construction activities

Supporting actions

Exempt small residential and non-residential projects from this requirement

Conduct outreach regarding new requirements

Seek external funding and leverage existing resources to support conversion of medium and heavy duty vehicles



GHG reduction

2035 4,698 metric tons
2045 15,081 metric tons



How will we measure success?

Ordinance adopted

Reduce 50% emissions from construction activities by 2045

Data to be used

Fuel reduced by construction equipment



What other benefits do these actions provide?

Improved air quality; improved public health



Timeframe

Medium-term



Equity considerations

Support high-road green job growth

Community Forest Management



Actions

Increase city's tree inventory by continuing to implement the Community Forest Management Plan

To help sustain the city's tree inventory, continue replacing trees at a 2:1 ratio

Conduct an inventory to assess urban canopy cover every five years

Supporting actions

Explore additional locations for tree planting beyond what is included in the Community Forest Management Plan, with "right tree right space", ongoing budget, and maintenance costs taken into consideration

Encourage eligible residents to take part in a free street tree planting assessment



GHG reduction

2035 7,536 metric tons

2045 11,984 metric tons



How will we measure success?

of trees added

Add an average 500 new trees to city's tree inventory per year through 2025 (3,500 total trees)

Achieve 32% urban canopy cover, or double the current canopy cover, by 2045

Data to be used

of trees added per year; # of trees replaced per year; citywide tree canopy cover



What other benefits do these actions provide?

Reduced heat island effects, enhanced community character, improved air quality, improved water quality, improved public health, increased natural habitat, improved resilience to climate impacts



Timeframe

Ongoing



Equity considerations

Prioritize tree planting using social, economic, and environmental data