

# 2016 Clean Air Plan/Regional Climate Protection Strategy

## Draft Control Measures & Implementation Actions

The table below is a list of all the draft control measures and their potential implementation actions that have been identified by Air District staff and interested stakeholders for the 2016 Clean Air Plan/Regional Climate Protection Strategy. The control measures and implementation actions are organized by economic sector, similar to those used by the State in the 2014 AB32 Scoping Plan Update. Sectors include: stationary sources, transportation, buildings, energy, agriculture, natural and working lands, waste, water, and short-lived climate pollutants. For each control measure we have summarized the specific implementation actions the Air District proposes to take to reduce emissions of ozone precursors, greenhouse gases, particulate matter, and/or toxic air contaminants. Some of the implementation actions are intended to also reduce the public's exposure to harmful concentrations of these emissions, to further protect public health.

All of the draft control measures and implementation actions have been developed in collaboration with our partner agencies: the Association of Bay Area Governments, the Metropolitan Transportation Commission, and the San Francisco Bay Conservation and Development Commission. The measures, specifically the Transportation Sector measures, are in direct support of Plan Bay Area. Detailed control measure descriptions will be available in February 2016 on the Air District's website: <http://www.baagmd.gov/plans-and-climate/air-quality-plans/plans-under-development>

### Stationary Sources

Name	Implementation Actions
<b>Fluid Catalytic Cracking in Refineries</b>	<ul style="list-style-type: none"> <li>• Establish emission limits to reduce secondary PM emissions at FCCUs</li> <li>• Work with FCCU operators to provide sampling ports that will allow a source-test program using EPA Method 202 to quantify total FCCU PM emissions, including condensable PM</li> <li>• Evaluate refinery progress in performing ammonia optimizations, as well as the results of Method 202 testing, to determine appropriate further actions</li> </ul>
<b>Equipment Leaks</b>	<ul style="list-style-type: none"> <li>• Reduce fugitive emissions of organic compounds, including methane, from refineries and chemical products processing, oil and gas production facilities, storage and transfer facilities, marine terminals, and other sources through requiring enhance leak detection and repair (LDAR) programs</li> </ul>
<b>Cooling Towers</b>	<ul style="list-style-type: none"> <li>• Establish hydrocarbon limits for cooling towers</li> </ul>
<b>Refinery Flares</b>	<ul style="list-style-type: none"> <li>• Review the results of Air District refinery flare monitoring rule 12-11 and the flare reduction rule 12-12, which apply to each of the five refineries in the Bay Area to identify amendments needed to make the rules more effective at reducing emissions</li> </ul>
<b>Sulfur Recovery Units</b>	<ul style="list-style-type: none"> <li>• Consider amendments to Air District Rule 9-1, Sulfur Dioxide to achieve the lowest SO<sub>2</sub> emissions feasible at sulfur recovery units without the addition of caustic scrubbing</li> </ul>
<b>Refinery Emissions Tracking</b>	<ul style="list-style-type: none"> <li>• Adopt an Air District rule that requires refineries to:               <ul style="list-style-type: none"> <li>- improve petroleum refinery emissions inventories of criteria pollutants, toxic air contaminants (TACs) and greenhouses gases (GHGs)</li> <li>- collect volume and composition data on crude oil and other feedstocks processed by refineries</li> <li>- expand refinery fence-line air monitoring and community air monitoring, and</li> <li>- collect information about equipment and operational practices where refinery energy utilization could be improved so that GHG emissions could be reduced</li> </ul> </li> </ul>

<b>Petroleum Refining Emissions</b>	<ul style="list-style-type: none"> <li>Develop and implement regulatory approach to ensure that petroleum refinery emissions do not increase significantly as a result of changing sources of crude oil. This will likely be a suite of several coordinated and complimentary actions.</li> </ul>
<b>Refinery Fuel Gas</b>	<ul style="list-style-type: none"> <li>Consider amendments to existing Air District Rule 9-1, Sulfur Dioxide, to impose more stringent sulfur limits for refinery fuel gas</li> </ul>
<b>SSMM Emissions</b>	<ul style="list-style-type: none"> <li>Consider removing exemptions from emissions limits during startup, shutdown, maintenance, and malfunction (SSMM) events in existing Air District regulations and permit conditions which limit criteria pollutant emissions from equipment at chemical plants, bulk terminals, and petroleum refineries during routine operations</li> </ul>
<b>Cap &amp; Trade Backstop for Refineries</b>	<ul style="list-style-type: none"> <li>Review energy efficiency benchmarking analyses to evaluate process-specific energy performance at the Bay Area's five refineries and support facilities, and identify opportunities to increase energy efficiency based on international best practices in refinery performance</li> <li>Pursue process-specific rule-making to increase energy efficiency and reduce GHG emissions from refineries and support facilities, as necessary to augment reductions achieved through AB32</li> </ul>
<b>Sulfuric Acid Plants</b>	<ul style="list-style-type: none"> <li>Achieve technically feasible and cost-effective sulfur dioxide (SO<sub>2</sub>) emission reductions from acid plants at Bay Area refineries</li> </ul>
<b>Greenhouse Gases in Permitting/GHG BACT</b>	<ul style="list-style-type: none"> <li>Revise Air District permit rules - applicable at all regulated facilities - to reduce the threshold at which facilities must implement "Best Available Control Technology" to control their GHG emissions</li> </ul>
<b>Sulfur Dioxide from Coke Calcining</b>	<ul style="list-style-type: none"> <li>Amend existing Air District Rule 9-14: Petroleum Coke Calcining Operations to reduce SO<sub>2</sub> emissions</li> </ul>
<b>Oil and Gas Production</b>	<ul style="list-style-type: none"> <li>Propose a new rule to limit emissions from oil and natural gas production</li> </ul>
<b>Methane from Capped Wells</b>	<ul style="list-style-type: none"> <li>Plan and execute a preliminary, short-term testing protocol with a subset of wells to estimate the magnitude and approximate composition of the fugitive emissions from Bay Area capped wells</li> <li>Establish emission limits for methane to support ARB's AB32 Scoping Plan and the Air District's GHG reduction goals. Adopt thresholds for VOC and toxic pollutant emissions from relevant existing regulations</li> </ul>
<b>Natural Gas Processing and Distribution</b>	<ul style="list-style-type: none"> <li>Engage with CPUC and ARB staff members responsible for developing and implementing the required elements of SB1371</li> <li>Continue to participate in the CPUC regulatory process</li> <li>Assess the CPUC-developed regulations for areas where Air District efforts may result in additional methane emission reductions and to ensure harmony with the Air District's Climate Protection Strategy</li> <li>Review the utility-reported data, when available, to glean additional information on GHG emissions and practices used to prevent and minimize methane emissions</li> </ul>
<b>Revisions to Air Toxics Hotspots Program</b>	<ul style="list-style-type: none"> <li>Propose revisions to the Air District's Air Toxics Hotspots program for existing facilities to incorporate more stringent risk reduction requirements</li> </ul>
<b>Surface Prep and Cleaning Solvent</b>	<ul style="list-style-type: none"> <li>Lower the VOC limits for surface preparation, cleanup, and equipment cleaning in Air District Rules 8-24, 8-30, 8-35, and 8-38</li> </ul>
<b>Stationary Gas Turbines</b>	<ul style="list-style-type: none"> <li>Reduce nitrogen oxide and VOC emissions from stationary gas turbines</li> </ul>
<b>Sulfur Limits of Liquid Fuels</b>	<ul style="list-style-type: none"> <li>Revise Rule 9-1 to include sulfur content limits for liquid fuels</li> </ul>

<b>Digital Printing</b>	<ul style="list-style-type: none"> <li>• Reduce emissions of VOCs from digital printers</li> </ul>
<b>General PM Emission Limit</b>	<ul style="list-style-type: none"> <li>• Reduce or revise the Air District’s allowable weight rate limitations for particulate matter</li> </ul>
<b>Commercial Cooking Equipment</b>	<ul style="list-style-type: none"> <li>• Consider PM and VOC limits for additional commercial cooking sources, including woks and wood burning ovens</li> </ul>
<b>Residential Fan Type Furnaces</b>	<ul style="list-style-type: none"> <li>• Reduce NOx emission limits on new and replacement central furnace installations</li> </ul>
<b>Dryers, Ovens and Kilns</b>	<ul style="list-style-type: none"> <li>• Reduce NOx emissions from kilns, ovens and furnaces used in drying, baking, heat treating, cooking, calcining, or vitrifying through an amendment to existing Air District rule</li> </ul>
<b>LPG, Propane, Butane</b>	<ul style="list-style-type: none"> <li>• Investigate potential VOC reductions by regulating filling of, and leakage from LPG, propane and butane tanks</li> </ul>
<b>Emergency Back Up Generators</b>	<ul style="list-style-type: none"> <li>▪ Develop and implement strategies to reduce emissions from old, highly polluting, backup generators. These strategies may include regulations, incentives or a combination of both.</li> </ul>
<b>New Source Review for Toxics</b>	<ul style="list-style-type: none"> <li>▪ Propose revisions to Air District Regulation 2-5, New Source Review of Toxic Air Contaminants, based on OEHHA’s 2015 risk assessment guidelines and CARB/CAPCOA’s 2015 risk management guidelines</li> <li>• Revise the Air District’s health risk assessment trigger levels for each toxic air contaminant using the 2015 guidelines and most recent health effects values</li> </ul>
<b>Asphaltic Concrete</b>	<ul style="list-style-type: none"> <li>• Evaluate the cost effectiveness, and feasibility of limiting solvent content of emulsified asphalt</li> <li>• Evaluate the availability of substitutes to diesel to clean asphalt related equipment</li> </ul>
<b>Portland Cement</b>	<ul style="list-style-type: none"> <li>• Amend sections of existing Air District Rule 9-13 pertaining to ammonia emissions to allow for replacement of the rolling 24-hour average with a different operating day averaging period for ammonia emissions</li> <li>• Considering amending Rule 9-13 to impose a stringent standard for SO2, detached plumes, and consider amendments to the Rule to reduce GHG emissions</li> </ul>
<b>Biogas Flares</b>	<ul style="list-style-type: none"> <li>• Develop a new Air District rule to reduce NOx from non-refinery flares</li> <li>• Investigate potential for more stringent limits on emissions from non-refinery flares</li> </ul>
<b>Fugitive Dust</b>	<ul style="list-style-type: none"> <li>• Consider applying the Air District’s proposed fugitive dust visible emissions limits to a wider array of sources</li> </ul>
<b>PM from Coke, Coal Storage and Handling</b>	<ul style="list-style-type: none"> <li>• Develop Air District rule limits to prevent and control wind-blown fugitive dust from petroleum coke and coal storage and handling operations</li> <li>• Establish enforceable visible emission limits to support preventive measures such as water sprays, enclosures, and wind barriers</li> </ul>
<b>PM from Track Out</b>	<ul style="list-style-type: none"> <li>• Develop new Air District rule to prevent mud/dirt and other solid track out from construction, landfills, quarries and other bulk material sites.</li> </ul>
<b>PM from Asphalt Operations</b>	<ul style="list-style-type: none"> <li>• Develop an Air District rule to require an abatement/control of smoke emissions related to asphalt delivery to roadway paving projects</li> </ul>
<b>Coatings, Solvents, Lubricants, Sealants and Adhesives</b>	<ul style="list-style-type: none"> <li>• Review existing Air District rules and compare the VOC limits with limits in other Air District rules and comparable VOC limits in other air districts rules; propose more stringent VOC limits as appropriate</li> </ul>
<b>Enhanced Air Quality Monitoring</b>	<ul style="list-style-type: none"> <li>• Ensure representative air quality data is being collected in the impacted communities identified under the CARE program</li> </ul>

	<ul style="list-style-type: none"> <li>• Enhance monitoring of local air quality by collecting more information about pollutant concentrations and exposure at localized levels</li> <li>• Partner with County Health Departments to identify areas of poor air quality and collaborate with the community on ways to potentially measure and reduce exposure and emissions from local and regional sources</li> </ul>
<b>Wood Smoke</b>	<ul style="list-style-type: none"> <li>• Consider further limits on wood burning, including additional limits to exemptions from Air District Rule 6-3: Wood Burning Devices</li> </ul>
<b>Odors</b>	<ul style="list-style-type: none"> <li>• Amend Air District Regulation 7 to strengthen odor standards and enhance enforceability</li> </ul>

## Transportation

<b>Name</b>	<b>Implementation Actions</b>
<b>Clean Air Teleworking Initiative</b>	<ul style="list-style-type: none"> <li>• Promote teleworking on Spare the Air Days</li> <li>• Develop teleworking best practices for employers</li> <li>• Develop additional strategies to promote telecommuting</li> </ul>
<b>Non-Commuter Trip Reduction Strategies</b>	<ul style="list-style-type: none"> <li>• Create campaign to encourage walking, bicycling, transit and carpooling, during non-commute periods, especially on Spare the Air Days</li> <li>• Explore ways to expand public awareness of availability and benefits of using Transportation Demand Management programs for non-commute trips</li> </ul>
<b>Trip Reduction Programs</b>	<ul style="list-style-type: none"> <li>• Encourage trip reduction policies and programs in local plans, e.g. general and specific plans</li> <li>• Provide grants to support trip reduction efforts</li> <li>• Encourage local governments to require mitigation of vehicle travel as part of new development approval, adopt transit benefits ordinances in order to reduce transit costs to employees, and to develop innovative ways to encourage rideshare, transit, cycling, and walking for work trips</li> <li>• Encourage transit agencies and shuttle providers to continue to implement and expand shuttle and feeder bus services</li> <li>• Pursue legislation to authorize the extension of the Commuter Benefits Program on a long-term basis</li> <li>• Work with employers to support implementation of Commuter Benefits Program</li> <li>• Fund various employer-based trip reduction programs, including: <ul style="list-style-type: none"> <li>- 511 Rideshare, including carpool and vanpool services</li> <li>- Vanpool support Programs</li> <li>- Travel demand management projects</li> <li>- Commuter Benefits Program</li> </ul> </li> </ul>
<b>Local and Regional Bus Service</b>	<ul style="list-style-type: none"> <li>• Fund local and regional bus projects, including: <ul style="list-style-type: none"> <li>- Operation and maintenance of existing bus services</li> <li>- Express Bus improvements</li> <li>- Transit performance incentive funding</li> <li>- Bus Rapid Transit projects</li> <li>- New and /or rehabilitated buses, vans and electric trolleys</li> </ul> </li> </ul>
<b>Local and Regional Rail Service</b>	<ul style="list-style-type: none"> <li>• Fund local and regional rail services, including: <ul style="list-style-type: none"> <li>- Extension of BART/eBART eastward from Pittsburg/Bay Point into eastern Contra Costa County</li> <li>- Construction of new Transbay Terminal</li> <li>- Caltrain electrification, including replacement of railcars and an advanced signal system</li> <li>- Various rail transit operations, expansion and enhancement projects</li> </ul> </li> </ul>
<b>Transit Efficiency and Use</b>	<ul style="list-style-type: none"> <li>• Fund transit efficiency projects, including: <ul style="list-style-type: none"> <li>- Ridesharing measures</li> <li>- Clipper on Bay Area transit agencies</li> <li>- Way finding signage, transit information displays and real-time departure displays</li> <li>- Transit capacity expansion projects</li> </ul> </li> </ul>

<b>Safe Routes to Schools and Safe Routes to Transit</b>	<ul style="list-style-type: none"> <li>• Provide funds for the regional Safe Routes to School and Safe Routes to Transit Programs</li> </ul>
<b>Ridesharing, Last-Mile Connection</b>	<ul style="list-style-type: none"> <li>• Promote carpooling and vanpooling by providing funding to continue regional and local ridesharing programs</li> <li>• Support the expansion of car-sharing programs</li> <li>• Encourage employers to promote ridesharing and car-sharing to their employees through the Bay Area Commuter Benefits Program</li> <li>• Provide incentive funding for pilot projects to evaluate the feasibility and cost-effectiveness of innovative ridesharing and other last-mile solution trip reduction strategies</li> <li>• Encourage ridesharing and car-sharing as potential CEQA mitigation measures</li> </ul>
<b>Bicycle Access and Pedestrian Facilities</b>	<ul style="list-style-type: none"> <li>• Encourage planning for bicycle and pedestrian facilities in local plans, e.g. general and specific plans</li> <li>• Fund bike lanes, routes, paths, and bicycle parking facilities through Bicycle Facilities Program</li> <li>• Provide funding for various bicycle, pedestrian and complete streets projects, including the regional Bay Area Bike Share program and Safe Routes to Transit and Safe Routes to Schools programs</li> </ul>
<b>Land Use Strategies</b>	<ul style="list-style-type: none"> <li>• Support implementation of Plan Bay Area through: <ul style="list-style-type: none"> <li>- general plan guidance and best practices resources to local governments</li> <li>- tools to assist local governments in addressing air quality and climate change in their local plans</li> <li>- infill and housing related incentives</li> </ul> </li> <li>• Maintain web portal with current climate action plans and other local best practices</li> <li>• Collaborate with regional partners to identify innovative funding mechanisms to help local governments address air quality and climate change in their general plans</li> </ul>
<b>Value Pricing</b>	<ul style="list-style-type: none"> <li>• Implement and/or consider various value pricing strategies, including: <ul style="list-style-type: none"> <li>- Congestion/cordon pricing projects in San Francisco</li> <li>- Road and auto pricing options, such as a VMT fee, gas tax, pay-as-you-go insurance</li> </ul> </li> </ul>
<b>Smart Driving</b>	<ul style="list-style-type: none"> <li>• Implement smart driving programs with businesses, public agencies and possibly schools</li> <li>• Create a voluntary certification program with fleet operators for use as a marketing tool</li> <li>• Emphasize complying with speed limits and other smart driving techniques on Spare the Air Days</li> <li>• Fund smart driving projects</li> </ul>
<b>Parking Policies</b>	<ul style="list-style-type: none"> <li>• Encourage parking policies and programs in local plans, e.g. reduce minimum parking requirements; limit the supply of off-street parking in transit-oriented areas; unbundling the price of parking spaces; feebates; etc.</li> <li>• Recommend innovative parking strategies in CEQA guidance and comments</li> <li>• Highlight parking best practices on the BAAQMD/Institute of Local Government's climate protection web portal</li> <li>• Promote parking cash-out programs</li> </ul>
<b>Freeway &amp; Arterial Operations</b>	<ul style="list-style-type: none"> <li>• Fund freeway and arterial operations, including: <ul style="list-style-type: none"> <li>- Freeway Performance Initiative</li> <li>- Arterial Management Program</li> <li>- Bay Area Freeway Service Patrol</li> </ul> </li> </ul>
<b>HOV Lane Segments</b>	<ul style="list-style-type: none"> <li>• Fund the implementation of various HOV lane gap closure projects</li> </ul>
<b>Cars &amp; Light Trucks</b>	<ul style="list-style-type: none"> <li>• Commit regional clean air funds toward qualifying vehicle purchases and infrastructure development</li> <li>• Partner with private, local, state and federal programs to promote the purchase and lease of battery-electric and plug-in hybrid electric vehicles</li> <li>• Partner with private, local, state and federal programs to install and expand public charging infrastructure and to promote existing charging infrastructure</li> <li>• Implement Vehicle Buyback &amp; PEV Incentive program</li> </ul>

	<ul style="list-style-type: none"> <li>• Support research programs advancing technology for plug-in hybrid, battery electric and hydrogen-fueled vehicles</li> <li>• Work with the Air Resources Board on a clean vehicles feebate program</li> </ul>
<b>Public Outreach and Education</b>	<ul style="list-style-type: none"> <li>• Implement the Spare the Air Every Day Campaign including Spare the Air alerts, employer program, and community resource teams</li> <li>• Implement a PEV Outreach campaign</li> <li>• Implement the Spare the Air Youth Program</li> </ul>
<b>Indirect Source Review</b>	<ul style="list-style-type: none"> <li>• Consider a rule that sets air quality performance standards for new and modified development projects</li> </ul>
<b>Planes</b>	<ul style="list-style-type: none"> <li>• Work with the appropriate partners to increase the use of cleaner burning jet fuel and low-NOx engines in commercial jets arriving and departing the Bay Area</li> </ul>
<b>Goods Movement</b>	<ul style="list-style-type: none"> <li>• Continue participation in the preparation of the Regional Goods Movement Plan</li> <li>• Participate in the Goods Movement Collaborative, led by the Alameda County Transportation Commission, and assist MTC in development of the Freight Emissions Action Plan</li> </ul>
<b>Medium- and Heavy-Duty Trucks</b>	<ul style="list-style-type: none"> <li>• Provide incentives to accelerate the replacement of heavy-duty on-road diesel engines in advance of requirements of the CARB in-use heavy-duty truck regulation</li> <li>• Provide funding to demonstrate hybrid drive trains for medium- and heavy-duty trucks, to demonstrate battery electric trucks, and to support further development of hydrogen fuel cell trucks</li> <li>• As technologies become available, offer financial incentives to accelerate deployment of more fuel efficient trucks</li> <li>• Continue to operate a trailer at the Port of Oakland to inform truck drivers about ARB's applicable anti-idling ATCMs, emission reducing technologies and fuels, and targeted incentives program in efforts to reduce emissions from the port and along the I-880 corridor</li> </ul>
<b>Ocean Going Vessels</b>	<ul style="list-style-type: none"> <li>• Develop a Green Ports incentive program in collaboration with the Ports of Oakland, San Francisco, Richmond, &amp; Redwood City</li> </ul>
<b>Commercial Harbor Craft</b>	<ul style="list-style-type: none"> <li>• Focus on assisting fleets to achieve early compliance with the ARB harbor craft air toxic control measure and supporting research efforts to develop and deploy more efficient engines and cleaner, renewable fuels for harbor craft</li> <li>• Coordinate with ARB, the CEC, local port authorities and vessel owners to support field demonstrations of advanced technology for marine and off-road engines and hybrid drive trains</li> </ul>
<b>Reduce Health Risks in Local Communities</b>	<ul style="list-style-type: none"> <li>• Assist local governments with health protective infill development via <i>Planning Healthy Places</i> guidance document</li> <li>• Continue to ensure that emission reduction incentive funding opportunities are prioritized to reduce emissions in impacted communities</li> <li>• Evaluate proposed new or amended stationary source regulations for potential health benefits in impacted communities</li> <li>• Continue to assess the cumulative health impacts to sensitive receptors living near highways and high volume roadways</li> <li>• Develop and expand community engagement strategies to provide input to the Air District on a range of issues and programs, including the CARE program, and make more technical data available to the public via the web</li> <li>• Continue to focus enforcement action on emission sources in impacted communities and look for opportunities to partner with local governments</li> </ul>
<b>Construction and Farming Equipment</b>	<ul style="list-style-type: none"> <li>• Provide incentives for the early deployment of electric, Tier 3 and 4 off-road engines used in construction, freight and farming equipment</li> <li>• Support field demonstrations of advanced technology for off-road engines and hybrid drive trains</li> <li>• Solicit projects to fund at the Port of Oakland that demonstrate advanced emission reduction technology within their distribution centers, warehouses, ports, intermodal rail yards, or other similar freight support facilities</li> </ul>

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**Lawn & Garden Equipment**

- Seek additional funding to expand the Commercial Lawn and Garden Equipment Replacement Program into all nine Bay Area counties
  - Establish a Residential Lawn and Garden Equipment Replacement Program
  - Explore options to expand Lawn and Garden Equipment Program to cover shredders, stump grinders, and commercial turf equipment
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## Buildings

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**Name****Implementation Actions****Green Buildings**

- Partner with KyotoUSA to identify energy-related improvements and opportunities for onsite renewable energy systems in school districts; investigate funding strategies to implement upgrades
- Identify and promote best practices and model ordinances
- Identify barriers to effective local implementation of the CALGreen (Title 24) statewide building energy code; develop solutions to improved implementation/enforcement.
- Provide guidance on developing funding mechanisms that generate revenue to reinvest in local climate protection programs
- Develop tools and incentives to facilitate PACE financing
- Work with ABAG's BayREN program to make additional funding available for energy-related projects in the buildings sector
- Promote financing options for property owners and utility customers to implement energy-related projects
- Engage with partners (e.g., BayREN) to target reducing emissions from specific types of buildings or certain geographic areas
- Investigate and implement strategies to reduce fossil fuel use in space and water heating

**Decarbonize Buildings**

- Explore potential Air District rule-making options such as limiting the sale of fossil fuel-based space and water heating systems for both residential and commercial use
- Develop or identify and promote model policies and best practices for local governments to restrict the use of fossil fuel-based furnaces, water heaters and natural-gas appliances in buildings
- Explore incentives for property owners to replace their furnace, water heater or natural-gas powered appliances with zero-carbon alternatives
- Provide resources that inform building owners and tenants of the technical considerations, economic advantages and environmental benefits on low- and zero-carbon technologies such as renewable energy systems (e.g., ground source heat pumps, solar water heaters) and electrical appliances (e.g., induction stoves, ENERGY STAR clothes dryers)
- Update the Air District's CEQA Guidelines to recommend that all commercial and multifamily developments install ground source heat pumps and solar hot water heaters as a mitigation measure when project emissions are anticipated to have a significant impact on air quality or GHGs
- Work with local jurisdictions to include low- and zero-carbon technologies in green building ordinances for all developments where it is technically feasible
- Support the development of financial incentives, such as low interest loan programs or tax incentives that facilitate the installation of zero-carbon technologies

**Market-Based Solutions**

- Implement a call for innovation to support market-based approaches that bring new, viable solutions to significantly reducing GHG emissions associated with existing buildings

**Urban Heat Islands**

- Develop and promote adoption of a model ordinance for "cool parking" that promotes the use of cool surface treatments for new parking facilities as well existing parking lots undergoing re-surfacing. This could include a combination of cool pavement and use of shade trees
  - Develop and promote adoption of model building code requirements for new construction or re-roofing/roofing upgrading for commercial and residential multi-family housing
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- Include cool roof, cool paving and parking lot tree shading as recommended mitigation measures in CEQA comments and guidance
- Collaborate with expert partners such as LBNL to perform outreach to cities and counties to make them aware of the importance of using cool roofing and cool paving techniques

## Energy

Name	Implementation Actions
<b>Decarbonize Electricity Production</b>	<ul style="list-style-type: none"> <li>▪ Engage with PG&amp;E, municipal electric utilities and CCAs to maximize the amount of renewable energy contributing to the production of electricity within the Bay Area as well as electricity imported into the region</li> <li>▪ Work with CCA networks (such as LEAN Energy) to explore options for supporting the formation of new CCAs, such as providing start-up funding or credit guarantees</li> <li>▪ Support the development of bioenergy to displace electricity generated from fossil fuels. Track and participate in the state's Bioenergy Interagency Working Group. Engage with stakeholders including dairy farms, forest managers, water treatment facilities, food processors, public works agencies and waste management to increase use of biomass in electricity production</li> <li>▪ Explore developing grant and/or incentive programs to facilitate, promote and pilot test new renewable energy-based electricity technologies and applications, such as energy storage technology</li> </ul>
<b>Decrease Electricity Demand</b>	<ul style="list-style-type: none"> <li>• Work with local governments to adopt additional energy-efficiency policies and programs, including within Climate Action Plans and other local plans</li> <li>• Support local government energy efficiency program via best practices, model ordinances, and technical support</li> <li>• Provide education and outreach about energy-efficiency programs and financing available to residents and businesses</li> <li>• Increase consumer awareness about energy efficiency benefits by incorporating message into existing outreach programs</li> <li>• Work with partners to develop messaging to decrease electricity demand during peak times</li> <li>• Collect relevant building data and compile information about the region's building stock and supporting infrastructure to inform future policy-making</li> </ul>

## Agriculture

Name	Implementation Actions
<b>Agriculture Guidance and Leadership</b>	<ul style="list-style-type: none"> <li>• Explore the feasibility of using Air District grant monies for agriculture-related demonstration projects</li> <li>• Research and track grant opportunities, including the availability of Cap and Trade funds for agriculture GHG reduction activities; facilitate applications for Cap and Trade funds on behalf of farms in the Bay Area</li> <li>• Track and participate in state level working groups formed to reduce GHG emissions from the agriculture sector</li> <li>• Disseminate information on carbon-based farming techniques</li> <li>• Develop guidance materials on carbon sequestration and carbon-based conservation farming techniques</li> </ul>
<b>Dairy Digesters</b>	<ul style="list-style-type: none"> <li>• Collaborate with state agencies and working groups and engage with the animal farming community to explore the feasibility of biogas recovery/anaerobic digester systems at farms; promote the many benefits of anaerobic digester systems; and identify barriers to widespread use of anaerobic digesters</li> </ul>

	<ul style="list-style-type: none"> <li>Identify case studies where dairy digesters have been implemented at dairy farms similar in size to those in the Bay Area</li> <li>Participate in and track progress of the state’s BioEnergy Interagency Workgroup and the State’s Dairy Digester Workgroup</li> </ul>
<b>Enteric Fermentation</b>	<ul style="list-style-type: none"> <li>Develop and implement best practices to reduce methane emissions from enteric fermentation</li> <li>Provide information on the GHG emissions associated with beef and/or dairy, and on the environmental benefits of choosing other sources of protein</li> </ul>
<b>Livestock Waste</b>	<ul style="list-style-type: none"> <li>Investigate the number and size of facilities in operation in the Bay Area to quantify the ammonia and methane emission reduction potential for this industry</li> <li>Evaluate research conducted in support of other rule development efforts in California in regard to feed and silage handling</li> </ul>

## Natural and Working Lands

<b>Name</b>	<b>Implementation Actions</b>
<b>Carbon Sequestering in Rangelands</b>	<ul style="list-style-type: none"> <li>Include off-site mitigation of GHG emissions through carbon sequestration projects in the Air District’s CEQA guidance and comments</li> <li>Work with the Marin Carbon Project, resource conservation districts, and local farms to apply compost amendments on grazed grasslands and rangelands</li> <li>Develop climate action plan guidance and/or best practices on soil management for local agencies and farmers and their associations to maximize GHG sequestration on rangelands</li> </ul>
<b>Urban Tree Planting</b>	<ul style="list-style-type: none"> <li>Develop or identify an existing model municipal tree planting ordinance and encourage local governments to adopt such an ordinance</li> <li>Provide assistance to local governments to increase tree canopy by assisting in identifying and securing incentive funds that are available for the planting of trees</li> <li>Include tree planting recommendations the Air District’s technical guidance, best practices for local plans and CEQA review</li> <li>Provide information via outreach materials, presentations and workshops to local government planning and public works staff on how to maximize air quality, GHG and public health benefits from municipal tree planting programs</li> </ul>
<b>Wetlands Sequestration</b>	<ul style="list-style-type: none"> <li>Develop guidance for local climate action plans on estimating GHG sequestration associated with wetlands restoration and protection</li> <li>Update the Air District’s CEQA guidance to include offsite mitigation strategies for GHG emissions through carbon sequestration from wetland restoration and preservation</li> <li>Identify working groups that the Air District may assist with technical expertise, research or incentive funds to enhance carbon sequestration in wetlands</li> <li>Provide technical assistance as needed for SF Bay Water Quality Improvement Fund and Greenhouse Gas Reduction Fund projects</li> <li>Assist agencies and organizations that are working to secure the protection and restoration of wetlands in the San Francisco Bay</li> </ul>

# Waste

Name	Implementation Actions
<b>Landfills</b>	<ul style="list-style-type: none"> <li>Propose amendments to Air District rule 8-34 to increase stringency of emission limits, including fugitive leak standards, and improve consistency with federal rules</li> </ul>
<b>Composting &amp; Anaerobic Digestion</b>	<ul style="list-style-type: none"> <li>Develop an Air District rule that includes emission limits based on best practices in other areas of the state</li> </ul>
<b>Green Waste Diversion</b>	<ul style="list-style-type: none"> <li>Develop model policies to facilitate local adoption of ordinances and programs to reduce the amount of green waste going to landfill</li> <li>Evaluate amendments to Air District Rule 8-34 to include smaller or older landfills where green waste has been accepted and is likely to be an ongoing source of fugitive methane emissions.</li> <li>Advocate for state and federal legislation that supports efforts to divert green waste from landfills, such as tax incentives for commercial food donation, creation of additional disposal facilities or the establishment of new collection strategies for green waste.</li> <li>Collaborate with public agencies and local businesses in seeking funding for green waste diversion programs such as on-site composting</li> </ul>
<b>Recycling &amp; Waste Reduction</b>	<ul style="list-style-type: none"> <li>Develop or identify and promote model ordinances on community-wide zero waste goals and recycling of construction and demolition materials in commercial and public construction projects</li> <li>Track and disseminate best practices in waste reduction among local government</li> <li>Identify funding opportunities for waste reduction programs for local governments, and support funding applications</li> <li>Participate in regional efforts to promote low-waste purchasing</li> <li>Encourage the reuse of existing asphalt, concrete and cement materials in construction projects among recommended mitigation measures in the Air District's CEQA Guidelines and comments</li> <li>Collaborate with and track progress of the state and regional working groups activity related to waste management issues</li> </ul>

# Water

Name	Implementation Actions
<b>Limit GHGs from POTWs &amp; Support Implementation</b>	<ul style="list-style-type: none"> <li>Initiate a process to better understand and quantify GHG emissions at POTW facilities, including methane and nitrous oxide emissions.</li> <li>Work with the POTW operators and broader water community to obtain funding for the development of green infrastructure in POTWs</li> <li>Investigate streamline the Air District's permitting process for biogas recovery projects</li> <li>Consider new Air District rules to regulate GHG emissions from water treatment plants</li> </ul>
<b>Support Water Conservation</b>	<ul style="list-style-type: none"> <li>Develop a list of best practices that reduce water consumption and increase on-site water recycling in new and existing buildings; incorporate into local planning guidance</li> <li>Identify and encourage the adoption of water conservation ordinances</li> <li>Incorporate public outreach and education on water conservation into the Air District's outreach programs</li> </ul>
<b>Improve POTW Inventories</b>	<ul style="list-style-type: none"> <li>Collaborate with POTW and ARB staff to agree upon a methodology to estimate all greenhouse gas emissions associated with POTWs</li> <li>In concert with staff at POTWs, complete a full inventory of GHG emissions for all POTW facilities</li> <li>Utilize the Air District's methane monitoring network, as appropriate, to verify emissions estimates at POTWs</li> </ul>

# Short-Lived Climate Pollutants

Name	Implementation Actions
<b>Short Lived Climate Pollutants</b>	<ul style="list-style-type: none"> <li>• Reduce methane from landfills and farming activities through various control measures listed under waste and agriculture sectors</li> <li>• Collaborate with ARB and CPUC to develop a rule to reduce methane emissions from natural gas pipelines and processing operations</li> <li>• Amend Air District regulations to reduce emissions of methane and other organic gases from equipment leaks at oil refineries</li> <li>• Continue and intensify Air District’s efforts to reduce residential wood-burning.</li> <li>• Provide grants and incentives to reduce emissions of particulate matter and BC from heavy-duty vehicles</li> <li>• Further reduce emissions from back-up generators (BUGs)</li> <li>• Monitor and support ARB efforts to develop and promote more efficient drive trains in heavy-duty vehicles</li> <li>• Pursue strategies to reduce motor vehicle use and to decarbonize the transportation sector, as described in the transportation measures</li> <li>• Continue to collaborate with ARB on enforcing the ARB regulation to reduce HFC leaks from commercial refrigerant systems</li> <li>• Enforce applicable regulations on the servicing of existing air conditioning units in motor vehicles, support the adoption of more stringent regulations by ARB and/or US EPA, and encourage better HFC disposal practices</li> <li>• Promote measures, such as the Air District’s vehicle buy-back program, to accelerate turnover in the vehicle fleet (once new refrigerants have been introduced to replace HFCs in motor vehicle air conditioning systems)</li> </ul>
<b>Guidance for Local Planners</b>	<ul style="list-style-type: none"> <li>• Develop SLCP guidance for local agencies</li> <li>• Track progress in adoption and implementation of SLCP reduction measures in local plans and programs</li> </ul>
<b>Methane Monitoring &amp; Inventory</b>	<ul style="list-style-type: none"> <li>• Develop a GHG air monitoring plan for the Bay Area that includes strategic selection of measurement locations, selection of relevant measurement technologies and procurement of appropriate GHG instrumentation, calibration gas standards and sampling logistics</li> <li>• Establish, operate and maintain the GHG air monitoring network</li> <li>• Report air monitoring data on the Air District’s website for access by the public and scientific community</li> <li>• Utilize an ultraportable methane analyzer to detect emissions hotspots in the Bay Area.</li> <li>• Analyze data from fixed-site network data to develop future source-specific investigation plans</li> <li>• Design, fabricate and equip the Air District’s mobile measurement van with high resolution instrumentation, meteorological devices, and related equipment for localized GHG measurements</li> <li>• Conduct source-specific emissions measurement studies and develop top-down methane emission estimates for comparison with the bottom-up inventory</li> <li>• Collaborate with the scientific community to use different methods to estimate methane emissions in the Bay Area, create spatially resolved maps of methane emissions, and identify sectors and areas for focused measurement study</li> </ul>