Appendix D

This appendix was provided by the California Air Pollution Control Officers Association (CAPCOA). It contains a discussion of CAPCOA's and other local and regional efforts to implement climate protection strategies (Appendix D1) and examples of local GHG emission reduction strategies (Appendix D2).

Appendix D1

California Air Pollution Control Officers Association's and Other Local and Regional Efforts to Implement Climate Protection Strategies

Federal inaction on meaningful climate policy has made leadership at the state, regional and local levels critical to reducing greenhouse gas (GHG) emissions. Local governments across the country, and particularly in California, have stepped up to the challenge and have been implementing climate protection strategies for years. In the Bay Area alone, more than fifty local governments have developed and are implementing local climate action plans. From land-use planning, building codes, and zoning ordinances, to funding and operating regional transit systems, to air quality regulation, regional and local governments and agencies have considerable control and influence over GHG emissions.

As we shift focus to reducing GHG emissions 80 percent below 1990 levels by 2050, it is clear that state actions alone won't be sufficient. State policy is most effective with the support, engagement, and complementary actions of regional and local efforts. Regional and local governments and agencies can help ensure the climate protection strategies we pursue maximize co-benefits in financial savings, economic growth, air quality and public health, climate resilience, and quality of life in our communities.

ARB's approach to climate protection provides a number of opportunities for action at the regional and local levels. Key among these is addressing vehicle miles traveled (VMT). ARB has effective regulations to increase vehicle fuel efficiency and lower the carbon intensity of fuel, but VMT continues to increase, undoing some of the gains. Regional and local governments and agencies influence VMT-related GHG emissions through land use planning, both on a project-level basis and in integrated, long-term blueprints such as the Sustainable Communities Strategies developed. In addition, local land use decisions can promote climate-friendly policies such as transit-oriented and mixed-use development.

The existing building stock presents another prime opportunity for local action. Nearly 70 percent of all single family homes in California were built prior to the adoption of Title 24 (Building Energy Efficiency Standards). As most of these buildings will still be standing in 2050, this represents a sizable opportunity to reduce GHG emissions by reducing building energy use. Local governments can adopt energy efficiency standards for existing buildings that exceed Title 24, and in fact many already have. In addition, some local governments have adopted time-of-sale ordinances requiring energy efficiency upgrades exceeding Title 24 upon a change of title. These are the types of aggressive policies that must be put in place if the state is to meet the 2050 goal.

Local air districts have a key role to play reducing regional and local sources of GHG emissions. Because many actions to reduce air pollutants also reduce GHG emissions, many districts are actively integrating climate protection into air quality programs. Local

air districts also support local government climate protection programs, by providing technical assistance and data, quantification tools, and even funding. In addition, air districts can be key players in regional cross-media collaborations to mitigate and adapt to climate change.

As the State shifts its climate-protection focus to the long-term, regional and local governments and agencies will play an increasingly important role in achieving California's goals. In implementing local climate protection strategies, they can ensure that the pathway to achieve our 2050 goal brings the most benefit to our households and businesses, builds resilience against climate change, and helps our communities thrive.

California Air Pollution Control Officers Association (CAPCOA) Efforts

CAPCOA Greenhouse Gas Reduction Exchange (GHG Rx): CAPCOA identified a need among local governments and agencies for high-quality California-created GHG credits that can be used locally, such as to mitigate new land-use, transportation, or industrial and commercial projects, meet climate action plans, comply with regulations, or for voluntary purposes. In response, CAPCOA developed a GHG emissions credit exchange to provide an accessible, low-cost source of *real, permanent, quantified, validated, enforceable,* and *additional* credits.

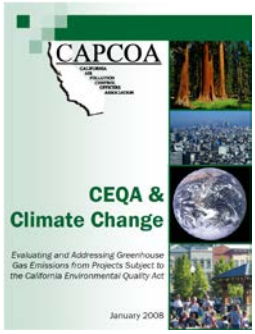
The CAPCOA GHG Reduction Exchange (GHG Rx) is an online service operated by CAPCOA and participating air districts. Its goal is to provide a secure, low-cost, high quality GHG exchange for credits created in California. Financial resources invested in-state will help create local jobs and realize needed air pollution co-benefits from projects in California.

In order to be eligible for listing on the GHG Rx, credits must be the result of projects that have occurred within California, and must meet specific quality criteria. Credit projects are evaluated by qualified staff at participating air districts to ensure the projects meet the quality criteria established by CAPCOA that ensure the credits are *real*, *permanent*, *quantified*, *validated*, *enforceable*, and *additional*. These criteria are embodied in a Credit Quality Criteria document, and specific protocols approved by CAPCOA. The GHG Rx criteria require the reviewing district to conduct an initial physical review of the project, as well as periodic site visits going forward. Credits are issued with a legally binding instrument that specifies the terms of approval and requires the holder to notify the district of any changes in the status of the credits. Additional information about the CAPCOA GHG Rx is available at: http://www.ghgrx.org/.

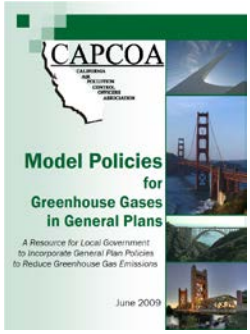
Resources: CAPCOA has taken a leadership role in creating a series of GHG resources for local governments addressing climate change. These resources include: *CEQA and Climate Change*; *Model Policies for Greenhouse Gases in General Plans*; and *Quantifying Greenhouse Gas Mitigation Measures*. The quantification methodologies were incorporated into an online project evaluation tool, the California

Emissions Estimator Model, or CalEEMod, which is now widely used throughout the State.

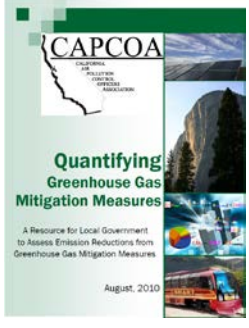
- ***CEQA and Climate Change -*** *Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act* ***(CAPCOA, 2008):*** Air districts have traditionally provided guidance to local lead agencies on evaluating and addressing air pollution impacts from projects subject to CEQA. To provide a common platform of information and tools for decision makers, CAPCOA prepared a resource document reviewing policy choices, analytical tools, and mitigation strategies. The paper provides alternatives and analyses for public agencies establishing procedures for reviewing GHG emissions from projects under CEQA. It offers three alternative programmatic approaches toward determining whether GHG emissions are significant. The paper also evaluates tools and methodologies for estimating impacts, and summarizes mitigation measures. It is available at no cost at: http://www.capcoa.org/documents.



- ***Model Policies for Greenhouse Gases in General Plans -*** *A Resource for Local Government to Incorporate General Plan Policies to Reduce Emissions of Greenhouse Gases* ***(CAPCOA, 2009):*** CAPCOA prepared the Model Policies Report in response to requests from local governments for information and resources to address GHG emissions in planning documents. The Model Policies Report provides a toolbox of policies, strategies and model language that can be used in General Plans, Climate Action Plans, and other planning efforts. It addresses the effectiveness of different goals, objectives, policies and implementation measures to reduce GHG emissions. The Report provides model language for GHG policies in General Plan elements, including a menu of approaches that are currently in use. It is offers flexible guidance to allow for different approaches to address GHGs in General Plans, and is available at no cost at: http://www.capcoa.org/documents.



- ***Quantifying Greenhouse Gas Mitigation Measures -*** *A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures* ***(CAPCOA, 2010):*** This report quantifies mitigation of greenhouse gas emissions associated with land use, transportation, energy use, and other related project areas. The mitigation measures quantified in the Report generally correspond to measures discussed in CAPCOA's earlier reports: *CEQA and Climate Change*; and *Model Policies for Greenhouse Gases in General Plans*. The measures are presented in Fact Sheets. The Report includes a step-by-step guide to using a Fact Sheet to quantify a project, including the project-specific data the user needs to provide. The Report also outlines procedures and limitations for quantifying projects where measures are combined; the limitations



ensure emission reductions are appropriately quantified and are not double counted. As a general guide, tables present approximate ranges of effectiveness for each of the measures. The report is available at no cost at: http://www.capcoa.org/documents.

- ***California Emissions Estimator Model (CalEEMod, 2011):*** The California Emissions Estimator Model (CalEEMod), developed in cooperation with air districts throughout the State, is a new statewide land use project emissions model designed as a uniform platform to quantify potential criteria pollutant and GHG emissions associated with construction and operation from a variety of land uses, such as residential and commercial facilities. CalEEMod calculates indirect GHG emissions from energy use, water/wastewater conveyance, solid waste disposal, and vegetation planting and/or removal and the benefits from implementing mitigation measures, including GHG mitigation measures developed and approved by CAPCOA. The model analyzes at the air district, county, air basin, or State level using approved emission factors, established methodologies, and the latest survey data. The model is available free of charge and can be downloaded and operated from one's own computer. The latest version of the model (CalEEMod 2013.2), a User's Guide, User's Tips, Frequently Asked Questions, and future events, such as upcoming training sessions, can be found on the CalEEMod website, www.caleemod.com.
- ***Model Rule to Implement Federal GHG Permitting Requirements:*** On May 13, 2010, the EPA issued a final rule addressing GHG emissions from stationary sources under Clean Air Act (CAA) permitting programs. The rule sets thresholds for GHG emissions that define when permits are required under the Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs for new, modified, and existing industrial facilities. Local districts were required to develop local programs to implement these new federal requirements that became effective on January 1, 2011. CAPCOA coordinated the development of a model rule that districts could use to implement these new requirements. The Association also provided model letters for districts to meet federal notification, status update, and submittal requirements.

Conferences

- ***The Future Is Green Conference & Expo:*** The Future is Green Conference & Expo, held in September 2008 in Long Beach, attracted more than 2,700 individuals over the three-day event. This included more than 1,000 attendees during the expert panels and keynotes; nearly 100 teachers for the teachers' workshop and nearly 100 entrepreneurs for the green technology business workshop; and over 1,300 middle and high school students for the student field trip days. Additional information about the event, as well as presentations and materials can be downloaded at no charge at: www.capcoagreen.com.
- ***The CAPCOA Climate Change Forum: The Harmonization of California and Federal Climate Change Programs:*** The CAPCOA Climate Change Forum was held in August 2010 in San Francisco. The purpose of the two-day event

was to promote consistency and collaboration on policy decisions at the state and federal levels in order to create a foundation for sustainable environmental and economic development, focusing on how recent federal climate change legislation and EPA activities will impact the implementation of AB32. The event consisted of two days of compelling speakers, collaborative discussions, networking and a tradeshow.

Looking Ahead at CAPCOA Efforts - *CAPCOA has identified several areas where GHG reduction credit protocols would be useful, and individual districts have volunteered to take the lead coordinating these efforts, working with ARB and interested stakeholders. The Association will also prepare an update and expansion of its Quantification Report, to include new measures and update baseline assumptions for various sectors, including transportation and energy. These updates will be incorporated into CalEEMod. CAPCOA is also working with ARB to reestablish a periodic symposium on air quality issues for local elected officials, expanded to include climate strategies and the synergies between the two, with a focus on economic benefits.*

Local and Regional Efforts

The following are examples of actions being taken by visionary and dedicated local governments in California, from the North to the South, the Coast, inland valleys, and mountains. More complete descriptions of these projects and others can be found in Appendix D2.

Stationary Sources- All air districts have programs in place to incorporate GHG related requirements into operating permits of major stationary sources subject to Title V of the federal Clean Air Act. These permits must include all applicable requirements for the permitted facility. In addition, districts with delegated authority or implementing rules in the State Implementation Plan also have preconstruction review programs for major sources, or major modifications to sources of GHG emissions. These programs require best available control technology, and in many cases, an energy efficiency plan.

A number of local districts also have category-specific rules that limit emissions of GHGs. Some of these, such as landfill regulations and refrigerant management, provided the initial platform for the statewide regulations adopted by the ARB. The South Coast AQMD has three regulations to reduce refrigerant emissions from stationary air conditioning and refrigeration systems and motor vehicle servicing, as well as restrictions on CFCs and halons from sterilization, fumigation, and fire extinguishing equipment. The Bay Area AQMD has implemented fees on GHG emissions, which fund its climate protection programs and provide incentive to regulated facilities to reduce emissions. Many districts also have programs and rules to reduce wood smoke, including black carbon and other aerosols. For example, the San Joaquin Valley APCD program includes mandatory no-burn days coupled with a robust incentive program that has replaced 3,267 wood-burning units with gas-fired units. The Sacramento Metropolitan AQMD Residential Wood Combustion Changeout program removed 2,866

units or replaced them with gaseous/electric units between 2006 and 2009. About 82% of fireplaces were replaced with gaseous units and 49% of woodstoves/inserts were replaced with gaseous units.

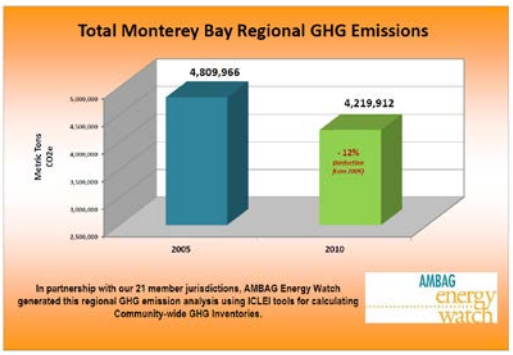
Black Carbon Reductions from Woodsmoke:

Sacramento Metropolitan AQMD regulations on residential wood combustion will reduce up to 52,000 tons per year of CO2e by 2030.

Looking Ahead at Stationary Sources- Local districts could prepare best practices guidance for energy efficiency for specific source categories, and perhaps offer streamlined permitting for sources that opt to follow those practices. The Districts and ARB could also partner to identify stationary source reduction strategies, and determine collaboratively whether those strategies would be most efficiently and effectively implemented through statewide regulation, local regulation, or on a case by case basis through permits. In addition permit review and compliance activities can encompass GHG requirements.

Inventory Programs- Air districts and local governments – often working together – have put considerable resources into developing baseline and business-as-usual inventories to support GHG planning and reduction efforts. On the central coast, for example, the SLO County APCD Board allocated, in 2008, a total of $103,578 from mitigation funds to develop GHG emission inventories of municipal operations and communitywide sources for all seven incorporated cities in SLO County and a comprehensive countywide report on GHG emissions.

The Association of Monterey Bay Area Governments (AMBAG) and Pacific Gas and Electric Company (PG&E) partnered to deliver the AMBAG Energy Watch Program, a regional leader in energy efficiency in Monterey, San Benito and Santa Cruz counties. AMBAG Energy Watch developed GHG inventories for the Monterey Bay region's 21 jurisdictions including: 2005 Baseline GHG Inventories for municipal operations and community-wide emissions; 2009 and 2010 GHG Inventories; and periodic updates for all 21 AMBAG member jurisdictions.



In the San Joaquin Valley, the district prepared county-wide GHG emissions inventories for Kern and Kings counties to assist those counties in prepare their upcoming Climate Change Action Plans. And in Southern California, the South Coast AQMD, with help from an EPA grant, modified its AER emissions reporting system to support consolidated GHG emissions reporting to federal, state, and local regulators. The modified system supports consistency in information across reporting platforms.

Looking Ahead at Inventory Programs – Districts and ARB should collaborate on specific pollutant and/or sector inventories, for example short-lived and higher GWP pollutants like methane. The agencies should also work with EPA to develop a

consolidated emissions reporting platform to enhance consistency and save resources for agencies and regulated sources. The platform can be designed to support continuing adaptive management of the Cap and Trade program for stationary source impacts, and to target community-based reduction strategies.

Emissions Banking and Trading Programs – Districts are developing GHG emissions banking and trading programs, or updating existing programs for traditional air pollutants to include GHGs. Some districts, such as the South Coast and Sacramento Metropolitan AQMDs have formal GHG Banking rules, while others, like Placer County and Northern Sonoma APCDs, use existing authority and contracts to approve and track GHG emission credits. All of these districts are participants in the CAPCOA GHG Rx.

Looking Ahead at Emissions Banking and Trading Programs – Local districts and ARB should work together to identify sectors where credit protocols could support cost-effective reductions to complement other program activities, and to demonstrate the feasibility of advanced technologies and innovative practices.

Grants & Incentives – Most air districts implement grant programs that reduce air pollution, including programs that reduce transportation related emissions through grants for clean passenger cars and trucks, lower emission school buses, and mitigation of goods movement, as well as agricultural assistance projects, and other engine categories. These air district grants also support enhanced transit operations, creative trip reduction strategies. Collectively, districts have awarded over a billion dollars in total grant funding. These funds reduce smog, toxic air pollutants, and GHGs.

San Joaquin Valley APCD
Ag Pump Electrification Program

- Partnership with the agricultural industry and the local electric utilities (PG&E/SCE).
- Replaced over 2,000 diesel agricultural irrigation pump engines with electric motors.
- Reduced more than 400,000 tons of CO2(e).

Many districts have also made grant funds available for energy related programs and specific GHG planning and reduction projects.

Bay Area AQMD Climate Protection Grant Program

- Funded 21 local climate action plans and climate elements in general plans, creating a surge of climate action planning in the Bay Area
- Reduced over 54,000 tons of GHGs
- Created over 100 permanent and temporary jobs for adults and youth
- Over 500 public meetings convened, serving over 25,000 participants

In 2007, the Bay Area Air Quality Management District implemented a Climate Protection Grant Program, awarding 53 Climate Protection Grants totaling $3 million to local governments and non-profit organizations in all nine counties of the Bay Area for (1) Youth; (2) Climate Protection Planning; (3) Capacity-building; (4) Regionalizing Best Practices; and (5) Fostering Innovation – incubating innovative new projects or policy approaches to reducing GHG.

The Santa Barbara County Air Pollution Control District, in partnership with the Santa Barbara County Education Office and local utility companies, has for the last four years offered small grants under the "Care for Our Earth" Teacher Grant Program. The program awards grants in the amount of $200 - $250 each to teachers for educational programs that aim to save energy, cut traffic and pollution, or save water. A higher grant tier covers more extensive projects. From 2010 to 2012, 63 grants were issued to 9 school districts. Additional information available at: http://www.sbcapcd.org/teachers.htm.

Care for Our Earth Teacher Grant Program - 2012

- At Pine Grove Elementary School in Orcutt, fifth graders formed a "Power Down Patrol" to inspect classrooms at breaks to be sure lights and equipment were turned off.
- Students at Carpinteria Family School learned how to ride their bicycles safely and legally in traffic.
- Students at Righetti High School in Santa Maria produced articles, songs and more about pollution & global warming.
- Seventh graders at Vista de Las Cruces School in Gaviota calculated energy use for computer equipment and designed a program to save energy.

Looking Ahead at Grants and Incentives – Funding for the Carl Moyer program, the Air Quality Improvement Program, and the Alternative and Renewable Fuel and Vehicle Technology Program, has been extended to 2023. Non-road sources will offer key reduction opportunities in the future. For example, the Santa Barbara District developed a Vessel Speed Reduction (VSR) incentive based on programs at the ports of Los Angeles and Long Beach. The district estimates a VSR program extending up the entire California coast could reduce emissions of GHG from ocean going vessels by 50 percent.

Robust and continuing funding is needed for reduction projects in the energy sector. Funds should continue to demonstrate innovative technologies/strategies, but specific funding should be set aside to the most successful and cost-effective projects. Air districts can assist the State in managing small scale grants, and grant programs designed to address specific community impacts, and environmental justice. For example, small grants could provide incentives to replace in-home combustion appliances like furnaces, water heaters, and woodstoves with cleaner technology. They could also replicate low-income focused weatherization programs like the one implemented in Sacramento.

Districts can target grants, incentive programs and demonstration programs to commercialize and implement technology transformations and create the needed infrastructure for new technologies. Incentive programs should also expand to include revolving loans, low-interest financing, and loan guarantee programs that stretch grant funds further.

Outreach and Education – Engaging local communities and schools is a key activity for air districts. This can take the form of newsletters, talks, information booths at fairs, contests, videos, schools programs, and many other strategies. Engaged and informed communities help local governments make better decisions, and are more prepared to invest their time and resources in a greener, more vital future.

Since 2006, the San Luis Obispo APCD's Annual Outreach Plan has focused efforts to reduce GHG emissions to meet the goals of AB 32. Key outreach programs include 1) Central Coast Clean Cities Coalition (C5) that promotes the use of alternative fuel vehicle technologies; 2) Food Miles Campaign to preserve local agricultural operations and reduce vehicle miles traveled transporting food; 3) SLO Car Free incentives program for visitors coming to the Central Coast; and 4) Energy Awareness program implemented in partnership with the County of San Luis Obispo to increase public awareness of the environmental and cost-saving benefits of reducing energy use and switching to renewable energy sources, including a countywide "Energy Event" to promote energy conservation and renewable energy.

San Luis Obispo APCD Outreach Results

- San Luis Obispo County has received an official "Clean Cities" designation as a result of the significant efforts of the C5 group to promote clean fuels use in our county.
- The SLO Car Free website received over 10,000 unique visitors in the past year alone, and over 2,000 people have registered to travel to SLO

Grants through non-profits leverage important community connections. In Forestville and Healdsburg, Northern Sonoma air district funding allowed the Climate Protection Campaign (CPC) to bring a complete education and emission reduction module to high school classrooms through the CoolSchools Program.

- The eCO2commute Student Trip Reduction Module at Healdsburg High School in 2009 taught students about the design, development, implementation, tracking and statistical analysis of a program to change student commute patterns.
- The Green Team Waste Reduction project at El Molino High School in 2010 taught students about development, implementation, tracking and analysis of a program to change student and faculty behavior surrounding waste, recycling, and composting.

Students learn in class then implement the programs and track results.

<u>Looking Ahead at Outreach and Education Programs</u> – Districts can support ARB with outreach efforts around specific Scoping Plan strategies. Local outreach efforts will continue to educate businesses and consumers about potential cost savings associated with energy efficiency, clean transportation, and other conservation strategies.

<u>Plans</u> – Air districts and ARB have begun integrated planning for air quality, climate protection and sustainable transportation. The South Coast District, Southern California Association of Governments, and ARB recently released "Powering the Future" as a long-term, coordinated vision to address these important goals. Other districts are addressing the same issues in different ways.

Local governments around the state are stepping up and adopting local GHG reduction targets, and plans to achieve those reductions. Local districts support these efforts with recommended policies, analysis, and funding. As a result, commitments are being made from rural California to its metropolitan centers. These commitments will shape transportation, land use, and energy policies at the local level for decades to come. They will create real and long-lasting emission reductions, air quality benefits, and vital, sustainable communities.

In December of 2012, the Butte County Association of Governments (BCAG) Board of Directors approved the area's first Sustainable Communities Strategy (SCS) as a component of the 2012 Metropolitan Transportation Plan (MTP). The 2012 MTP/SCS will reduce the Butte County region's per capita GHG emissions from passenger vehicles by 2% for the years 2020 and 2035, from 2005 levels, while managing an estimated increase of 110,000 persons, 47,000 new housing units, and 41,000 additional jobs. The City of Chico adopted their Climate Action Plan (CAP) in November 2012 with a goal to reduce greenhouse gas emissions (GHG) by 25% by 2020. The City General Plan policies incorporated into the plan reduce community-wide greenhouse gas emissions from the transportation, energy, and waste sectors. The City of Gonzales adopted a Climate Action Plan in February 2013. The plan is a product of the "Gonzales Grows Green" Sustainable Community Initiative, an outgrowth of the City's Vision Statement adopted in 2005. The plan provides energy use, transportation, land use, water use, and solid waste strategies to reduce Gonzales' greenhouse gas emissions levels to 15 percent below 2005 levels by 2020.

Local GHG Reduction Commitments

- City of Chico: 25% by 2020
- City of Gonzalez: 15% below 2005 levels by 2020
- City of Arcata: 20% below 2000 by 2020
- Sonoma County & All Nine Cities: 25% below 1990 levels by 2015

The goal of the Humbolt County has a living Climate Action Plan is to reach 1990 GHG levels by 2020, and the City of Arcata Community GHG Reduction Plan is designed to reduce GHG emissions to 20% below 2000 levels by 2020.

In 2005, the ten local governments within Sonoma County set a mutual GHG target (25 percent below 1990 levels by 2015). The Regional Climate Protection Authority (RCPA) was created by the Legislature in 2009 to coordinate their climate efforts; it is made up of representatives from each of the cities and the Board of Supervisors. RCPA is leading development of Climate Action 2020, a coordinated, comprehensive plan for each jurisdiction with specific measures to reduce GHGs from building energy use, transportation, water use and transport, waste, wastewater and agriculture.

<u>Looking Ahead at Plans</u> – Air quality and climate protection planning will need to become more fully integrated. In addition, energy and transportation planning will have to become more explicitly integrated with air quality and climate protection plans. Air districts can work with state agencies and local governments to identify and expand regional strategies that address air quality, climate, energy, transportation, and land use. They will also continue to support local government climate planning.

CEQA – Air districts up and down the state provide technical support to local lead agencies reviewing projects under CEQA. Districts also comment on air quality and GHG analyses in CEQA documents as Responsible Agencies, and occasionally serve as Lead Agencies for certain project types. A number of districts, including San Joaquin Valley and the South Coast, have adopted formal thresholds for review of GHG emissions under CEQA. The Bay Area undertook an extensive threshold adoption process. In March 2012, the SLO County APCD Board adopted GHG CEQA Thresholds of Significance for residential, commercial and industrial projects, to assist lead agencies evaluating GHG emission impacts from new land use projects subject to CEQA review. Significance thresholds streamline CEQA review, provide consistency and certainty, and encourage project proponents to minimize GHG emissions. Additionally, the San Joaquin Valley APCD has developed numerous Best Performance Standards for stationary sources and development projects that identify mechanisms for projects to reduce their GHG emissions to levels such that their GHG emissions are not significant for purposes of CEQA review.

Looking Ahead at CEQA – The Legislature may address CEQA streamlining concerns. If this includes incentives for projects to minimize and mitigate GHG emissions, it could help achieve climate and air quality goals. More jurisdictions will establish GHG thresholds going forward, or will adopt comprehensive CAPs that allow simplified approval of projects that are consistent with measures in the CAP. Air districts will continue to provide technical support for these efforts.

Energy

Building Energy Efficiency – Existing building stock presents a significant opportunity to reduce energy use and associated GHGs. Efficiency projects also save money. Low-income households spend an average of 14% of their income on energy, compared to 3.5% for most other households. The SMAQMD collaborated with Sacramento Association of REALTORS®, Rebuilding Together Sacramento, Sacramento Habitat for Humanity, and the University of California Davis School of Civil and Environmental Engineering to weatherize housing for low-income residents in the Sacramento Region. Using both paid and volunteer workers, the Home Energy Conservation program installs compact florescent lights, weather stripping, window caulking, outlet sealers, water heater blankets, water heater pipe insulation, and low-flow showerheads. These weatherization components deliver the greatest GHG emissions reductions for the least cost. Residents also receive information on other energy saving strategies. The University of California, Davis, quantifies energy savings from the upgrades.

Sacramento Home Energy Conservation Program

- Since April 2012, over 100 low-income, single-family homes have been upgraded.
- Roughly 1 ton per year of GHG reduced per home.
- Total average cost of upgrades per home is $300.
- Recipients save up to $360 annually.

Around Monterey Bay, AMBAG recently launched a program to improve energy efficiency for local agricultural businesses, non-profits, school districts, special districts, municipal facilities, and hospitality facilities. As of September 2013, the combined direct installation program, including agriculture, installed equipment projected to generate energy savings of 1,116,393 kWh each year.

The San Joaquin Valley APCD promoted the Regional Energy Efficiency Strategy with partnerships with energy agencies, municipalities, utilities, and other stakeholders to inform and educate residents, businesses, and communities on energy efficiency opportunities. As a part of these partnerships, the San Joaquin Valley APCD administered an Energy Efficiency and Conservation Block Grant with 36 participating cities and counties reducing electricity consumption by 4.7 million kwh per year.

Further South, the emPowerSBC Program helps homeowners make energy saving improvements with incentives, financing, qualified contractors and expert advice. Eligible projects include air sealing, adding attic insulation, duct sealing, hot water pipe insulation and low-flow showerheads, additions of solar water heating, and electric system upgrades. Additional information at: http://www.empowersbc.org/home.

emPowerSBC Since 2012

- $1.7 million in retrofits in 217 homes
- One home cut energy use by 52%

Sonoma County Energy Watch (SCEW) is a partnership between the County of Sonoma and PG&E, which was established in 2009. It provides free energy audits, efficiency consulting, incentives and rebates, and financial consultation to local governments, nonprofit organizations, small businesses and special.

SCEW Results Since 2009

- Over $1 million in incentives for over 170 individual projects
- Saved about 5.2 million kWh & 16,570 therms
- Reduced 1,265 metric tons of CO_2e
- Created an estimated 239 jobs.

The Sonoma County Comprehensive Energy Program was completed by County General Services in 2010. It included 39 efficiency and alternative energy measures at 24 County buildings, based on a comprehensive inventory of facility energy use. Measures included: installation of a 1.4 MW Fuel Cell Cogeneration Power Plant; lighting retrofits at 20 buildings; HVAC replacements or rebuilds in 4 buildings; upgrades of HVAC motors and variable frequency drives; water efficiency retrofits at 16 buildings; and a central mechanical plant upgrade. Projects performance is tracked and quantified. Information at: www.sonoma-county.org/gs/energy/pdf/CEP_Fact_Sheet.pdf.

Sonoma County CEP: At a Glance	
Project Cost	$22,272,029
Incentives, Grants, and Rebates	$3,941,226
Financed Amount (over 16 years)	$18,730,803
Interest Rate	4.98%
Annual Energy Cost Escalation	5%
Total payments	$31,794,615
Water saved = 16,500,000 gallons	$247,300
Electricity saved = 2,262,445 kWh	$319,839
Natural gas saved = 171,164 therms	$121,500
Fuel cell generation = 10,830,193 kWh	$1,118,800
Total Cost Savings	$1,807,439
First year of positive cash flow	Year 12
Cumulative positive cash flow at 25 yrs	**$38,404,231**

Even small, rural communities have found ways to invest in efficiency projects. The McKinleyville Community Services District retrofitted streetlights in one section of the city with LEDs during the first phase of a streetlight replacement program. In the second phase, funded with a zero percent interest loan from PG&E, they will replace all remaining fixtures. The loan payback is less than ten years, with cost savings continuing into the future.

A financing approach for efficiency projects is "Pay-As-You-Save" on-bill financing, also known as PAYS. These programs allow utility customers to make energy and water efficiency upgrades with a loan that is repayed through the utility bill. The City of Windsor demonstrated a PAYS pilot program called Windsor Efficiency PAYS® (Pay As You Save), with support from the Regional Climate Protection Agency. PAYS has served approximately 5% of all residential units in Windsor, and achieved average savings of: 10% of energy use; 20% of indoor water use; and, $15 per month in net utility costs. Based on initial program successes, the RCPA is working to expand the program through the Bay Area Regional Energy Network (BayREN). The BayREN PAYS Pilot continues to work with Windsor, as well as with the City of Hayward, the San Francisco Public Utilities Commission, and the East Bay Municipal District.

Looking Ahead at Building Energy Efficiency – The Districts and ARB should identify successful projects with well-defined cost-savings and develop "toolkits" to streamline implementation. Agencies should provide creative, low-interest financing packages to allow jurisdictions to implement energy efficiency projects, and to offer them to residents and businesses. Funding for these efforts can come from Cap and Trade revenues, Public Benefits charges/programs, or surcharge mechanisms modeled after the successful Carl Moyer program. Expanded bonding authority could allow local jurisdictions to establish funding on their own. Forward capacity markets for energy efficiency, similar to the program operated by Vermont, could fund aggregated projects.

Alternative Energy – Creative financing and incentive funding for alternative energy projects are helping increase installation of these projects throughout the state. On the Central Coast, a non-profit, the Community Environmental Council (CEC) created the Solarize program, which leverages group purchasing and discounted pricing to help local homeowners install solar electric systems. CEC, in partnership with other organizations, has implemented Solarize programs in a number of Central Coast regions including Santa Barbara, Ojai Valley, San Luis Obispo, and Santa Ynez Valley. CEC evaluates and selects experienced solar installation companies, and negotiates a limited time, discounted price that is then offered to local residents who utilize the program.

The City of Berkeley and the County of Sonoma both operate Property Assessed Conservation Easement (PACE) programs. PACE is a financing option that

Sonoma County Energy Independence Program (SCEIP)
PACE Funding Summary since 2009
7,647 tons CO2e Reduced per year

	Number	Associated Funding
Applications Received	2,746	$99.5 million
Applications Approved	2,118	$69.8 million
Projects Funded	1,963	$64.0 million
Projects with funding pending	37	$1.1 million

authorizes a local government to provide up-front funding to eligible property owners to finance the installation of energy efficiency and water conservation improvements and renewable energy systems on their property. Funds are repaid to the city or county with interest, over time on the owner's property tax bill. The financing is 100% voluntary.

Community Choice Aggregation (CCA) is a system adopted into law in the states of Massachusetts, Ohio, California, New Jersey and Rhode Island which allows cities and counties to aggregate the buying power of individual customers within a defined jurisdiction in order to secure alternative energy supply contracts. Currently, nearly one million Americans receive service from CCAs. The California Legislature passed Assembly Bill 117 in 2002, enabling Community Choice Aggregation.

Marin County established its CCA, Marin Clean Energy, in May of 2010. It provides *light green* (50% renewable) and *deep green* (100% renewable) electricity purchase options. Deep green costs ratepayers selecting it $5 per month more than light green rates.

In Sonoma County, Sonoma Clean Power (SCP) is a non-profit agency independently run by the Sonoma County cities that have joined the program, and the County of Sonoma. It provides customers energy generated by renewable sources at competitive rates (residential rates are expected to be between 1.8% below and 1.1% above PG&E's rates; commercial rates are estimated between 3.1% below and 0.5% above PG&E). SCP will provide 33% renewable energy in early program years, increasing to 50%, and 100% renewable power for about $10-$15 extra per month for a typical single-family house. The cleaner power will reduce GHGs from electricity use by at least 3.1 million tons over 20 years.

The Monterey air district's APCO is the Vice Chair of the Board for the Monterey Bay Community Power Project, Project Development Advisory Committee. The project is investigating the option of community choice aggregation for the Monterey Bay region. The next step in the project is raising funds to conduct a technical feasibility study.

<u>Looking Ahead at Alternative Energy</u> – Expansion of alternative energy systems depends on funding and the ability to address key logistical challenges. Cap and Trade revenues, as well as creative funding strategies like those described for financing energy efficiency programs (above) would help address the funding shortfall. It could also provide start-up financing for PACE, CCA, and other similar programs. PACE, CCA, and power pooling authorities can all play an important part in increasing renewables. PACE programs would benefit from national legislation to address the impediments created by the rulings of the FHFA, as well as public-private partnerships in finance marketplace. In addition, expanded net metering would help defray costs of ownership, and decrease the pay-back time for renewable energy projects. Access to utility information hampers creation of these types of programs as do unresolved questions about access to / use of existing infrastructure owned by the utilities; reasonable, state-sanctioned mechanisms to resolve these questions could support expansion of PACE, CCA, and other similar programs.

Transportation

Alternative Fuel & Electric Vehicles – The Bay Area, Northern Sonoma, and South Coast air districts are all members of the California Plug-in Electric Vehicle Collaborative and have devoted significant resources to Collaborative work products as well as supporting electric vehicles in their own regions. As a result, communities around the San Francisco Bay, in Sonoma County, and in the greater metropolitan Los Angeles area are among the most "EV Ready" in the nation. However, across the State, air districts are working to make communities "EV Ready," with coordinated efforts among the San Luis Obispo, Santa Barbara, and Ventura air districts; leadership by the AMGAG and the Monterey Bay air district in San Benito, Santa Cruz, and Monterey Counties; and readiness projects from San Diego to Sacramento to Eureka. There are nearly a thousand charging stations in California.

EV Infrastructure

- Over 500 Level 2 stations and 20 DC Fast Chargers in the South Coast
- Over 180 public charging stations and 2700 home charging units in the SF Bay Area
- 60 active charging stations in the Sonoma County Electric Trail (116 total); over 20 MWh of cumulative charging, over 20 MT CO2e reduced.

The major metropolitan areas have significant investments in natural gas, and technology development programs for biofuels. The South Coast air district has partnered with other companies and agencies to develop and install hydrogen technologies and infrastructure, including: developing hydrogen storage capability for a gas bending facility at the University of California, Irvine; partnering with Hydrogenics Corporation to install a hydrogen generation and fueling station at SCAQMD Headquarters (using electrolysis of water to produce hydrogen, with backup electrical power production using a hydrogen-powered internal combustion engine); partnering with UCLA to demonstrate a new publicly available hydrogen refueling station open 24 hours a day 7 days a week; and other key projects.

Local governments have also stepped up with their own fleets. In Sonoma County, the Board directed County staff to reduce emissions from the County's On-Road fleet by 20% by 2010. Hybrid electric and all electric vehicles comprise 29% of the County's light equipment fleet. The Sonoma County Fleet was recently recognized as number 14 in 100 Best Fleets in North America (out of approximately 38,000 government fleets) by Government Fleet Magazine, INVERS, and Property Room.

Sonoma County Green Fleet Results

- Saved over 137,000 gallons of gasoline.
- Reduced 2,925 tons of GHG while fleet VMT increased by over 10,000,000 miles compared to the previous 10 year baseline.
- Electric hybrid fleet averages 47.5 mpg, compared to 20.4 mpg for conventional vehicles.

Looking Ahead at Alternative Transportation – For the next several years, electric and other alternative fueled vehicles will continue to need incentive funding. The districts and ARB should collaborate with other interested stakeholders to develop a multi-year strategy for targeting and adjusting funding levels based on market penetration and

consumer behavior. Similar collaboration should address more coordinated plans for charging infrastructure, designed to optimize the network of stations within a region and between regions, building from data available from stations already installed, vehicle use patterns, and other key information. Expanded access to volume purchasing and other similar creative funding can help reduce upfront costs.

Trip Reduction – Bay Area Bike Share Program is one of the first public bike share services offered in California and the first bike share program in the nation to launch as a regional, multi-city service. Program members can check out a bicycle from a network of automated stations, ride to another station nearest their destination, and leave the bicycle safely locked for someone else to use. Bicycles are available at stations for use in San Francisco, Redwood City, Palo Alto, Mountain View, and San Jose, near transit hubs, high-density residential areas and key destination points such as shopping or employment centers. Current prices are $88 per year for a full-time member or $22 for a three day pass and $9 per day for the casual rider. The Air District is the lead administrator.

The Santa Barbara Car Free project, founded and led since 1998 by the Santa Barbara County Air Pollution Control District is a collaborative effort to reduce air pollution and greenhouse gas emissions from tourists' cars. Amtrak® and more than 100 businesses, agencies, transportation providers, organizations, and local tourism businesses participate. The Project's 2013 "Cool Car Free Discounts" gives discounts from more than 66 hotels and activities and a 20% discount on the Amtrak Pacific Surfliner®. Thousands of visitors use the Santa Barbara Car free discounts every year. The Project received a 2009 national Clean Air Excellence Award from the U.S. Environmental Protection Agency and the Clean Air Act Advisory Committee. Information at: www.santabarbaracarfree.org

In 2009, the San Joaquin Valley APCD adopted a rule that requires larger employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. The District has also offered a variety of incentive programs aimed at reducing trips, including its REMOVE program. Some of the current REMOVE program trip reduction elements are: E-Mobility (telecommunications); bicycle infrastructure; and public transportation and commuter vanpool subsidies.

Looking Ahead at Trip Reduction – Increased funding for public transit is critical to achieving trip reduction goals. Programs that support car sharing and bike sharing can be encouraged with access to start-up funding, and resolution of liability, safety, and security issues. Local districts can establish and expand employer-based trip reduction programs. Employer resistance to these programs could be lessened with tax and other incentives.

Carbon Free Water by 2015

- 80% reduction in GHG emissions from 2007
- 96% reduction in GHG emissions from electricity use
- One project alone will provide 36 permanent jobs, as well as 94 temporary construction jobs

Water – The Sonoma County Water Agency set a goal in 2006 of operating a

carbon free water system by 2015. To achieve this goal, the Water Agency is helping pioneer new technologies that have been carefully evaluated for economic viability. Examples of some of the energy and sustainability projects, and coordinated program efforts currently under way include:

- Installed a 5 kW wind turbine at the wastewater treatment plant in Geyserville that cost $29,500, and supplies about 7% of the annual power for that service zone;
- Energy efficiency improvements at the Water Agency's administration building, including window film application (saving 30,000 kWh annually in heating and cooling), over 600 light fixture retrofits (saving about 62,000 kWh per year), and 16 LED projects (300 kWh per year);
- Installed three photovoltaic systems that generate 2 MW combined of solar electricity; and
- Planned installation of a Farm-to-Fuels biodigester using local chicken manure to make biogas and nutrient rich fertilizer, fueling a 1.4 MW fuel cell to provide between 25% and 33% of the Water Agency's total base power needs and reduce about 4,000 tons per year of GHGs.

More information can be found at: www.scwa.ca.gov/**carbon**-free-**water**

The Santa Barbara County Green Business Program is a free, voluntary program that offers incentives and assistance to encourage businesses to implement voluntary actions to protect, preserve, and improve the environment beyond what current laws require. Businesses meeting these criteria can be certified as green businesses. The program has roughly 30 partner agencies, utilities and organizations and has certified over 70 businesses since 2008, at a current rate of approximately 20 businesses a year. Additional information can be found at: http://www.sbcapcd.org/biz/greenbizsbc.htm

Santa Barbara Green Business Program

- A hotel in Santa Ynez Valley reduced water use by 10.4%, saving 10.2% in per room water costs. It also reduced electricity use by 6.9%, a cost savings per room of 10%. The hotel estimates it is saving an average of $15,000 to $20,000 a year.
- A real estate management company achieved water cost savings of 41%, electricity cost savings of 25%, and increased waste diversion from 33% to 71%.

Looking Ahead at Water – Local districts can collaborate to identify water strategies that have the greatest reduction potential, or that meet cost effectiveness targets, and develop "toolkits" to make their adoption easier for agencies, businesses, and consumers. Low cost financing would relieve up-front cost pressure, reduce overall project costs, and reduce the pay-back period. Information about the most cost-effective projects could provide the basis for a statewide program or future rule.

Solid Waste – Decomposing waste generates methane, a potent GHG. Waste-to-energy and waste-to-fuel projects take that harmful waste and create useful product, and they displace petroleum fuels. For example, the

Sacramento Waste-to-Fuel

- 25 tons per day of food waste diverted to anaerobic digestion
- 500 diesel gallons equivalent of compressed natural gas for 10 refuse trucks

SMAQMD, through its leadership role with Clean Cities, is working closely with numerous partners in the region to build awareness of the renewable fuel opportunities from the growing volume of organic waste. The District is working to expand the number of organizations and buildings that are separating their organic wastes and diverting it to a local anaerobic digester. Renewable natural gas is available today to the growing number of Sacramento fleets with natural gas vehicles. Through workshops, newsletters, public forums, and outreach opportunities, the District hopes to dramatically increase the volume of renewable fuel produced and used in the region.

Looking Ahead at Solid Waste – Local districts will continue to work with communities and local governments on strategies to increase diversion from landfills. Districts can work with ARB and operators of solid waste sites to identify landfill gas criteria for successful vehicle fuel projects, make project evaluation checklists for waste-to energy projects, and establish best practices for landfill GHG emission reductions to ensure the projects don't interfere with clean air progress and protecting public health. Districts can also provide compliance support for ARB's landfill gas regulation.

Natural & Working Lands – The Placer County APCD is supporting sustainable forest management initiatives to restore the health of California's forest ecosystems and reduce the risk of catastrophic wildfire. Projects involve valuing the wide range of society and environmental benefits that are associated with treating forest fuels and the use of excess biomass for energy and production of biochar. These benefits include significantly improving regional air quality and reducing the risk of the California forests from becoming net emitter of GHGs -- and also protect watershed quality, soil productivity, wildlife habitat, recreational lands, forest resources, provide baseload power and economic support for rural communities, and reduce wildfire suppression costs. These projects directly contribute to the Scoping Plan objective to encourage sustainable activities that protect and maintain current forest stocks through reducing vegetative fuels that could feed wildfires and using this waste for biopower.

Placer Biomass Program

- Used over 20,000 bone dry tons of forest wastes
- Produced 20,000 MWh of renewable electricity
- Reduced 7,000 tons of GHGs, 120 tons of PM, 32 tons NOx, 1,000 tons CO, and 100 tons NMOC (results published in peer-reviewed journal and honored with a 2011 US EPA Clean Air Excellence Award)
- Developed a Biomass Waste for Energy GHG Offset Protocol endorsed by the California Board of Forestry.

The District is leveraging resources and funds from its Clean Air Grant program and Supplemental Environmental Projects, with cooperation and coordination with forest land manager stakeholders including the USFS, CALFIRE, Sierra Nevada Conservancy, local Fire Districts, and industrial timber operators, and research institutions including UC Berkeley, UC Davis, and University of San Francisco.

Specific activities include:

- Demonstrating significant benefits for air pollutant emissions economics using excess biomass wastes for energy.
- Developing a Biomass Waste-to-Energy GHG Offset Protocol.

- Establishing a methodology for and quantifying the air pollutant benefits of selective forest fuels reduction projects for small diameter trees and limbs and brush.
- Assisting development of a regional network to economically collect biomass wastes for energy.
- Assessing the air pollutant emission benefits and economics of distributed forest biomass energy conversion systems in Placer County.
- Supporting development and implementation of energy pricing policies that value the full range of benefits of bioenergy and forest management while balancing ratepayer impacts.
- Technical support for development of small scale distributed energy facilities throughout the Sierra Nevada using excess forest biomass as feedstock and best available control technologies.
- Developing of a Forest Biomass Waste Biochar GHG Offset Protocol.
- Quantifying and determining the impact of black carbon emissions from open pile burning.
- Research to quantify the GHG benefits of reducing catastrophic wildfires.

Looking Ahead at Natural and Working Lands – Stakeholders will continue to work to accelerate the pace of forest fuels reduction projects through establishment of sustainable practices and full monetization of their associated ecological, environmental, and economic benefits. Districts will also continue to work with open space and land managers, as well as parks departments, to identify, quantify, and support land management strategies that increase carbon sequestration.

Vegetation – The SCAQMD has implemented urban tree planting and reforestation projects to reduce GHGs, secure clean air benefits, and provide employment opportunities. The SCAQMDs Tree Partnership program provided funds to help over 30 cities and 2 counties plant urban trees during the economic downturn while providing employment opportunities to students. Under this program over 9,000 California native low biogenic VOC trees were planted and over 500 students were employed. The SCAQMD is also funding an urban tree planting project with the LA Conservation Corps in the area surrounding the Chevron El Segundo refinery. Under this program the Urban Forestry protocol is being followed to identify the types of GHG reductions that be developed under this project protocol. Currently over a thousand trees have been planted by LA Conservation Corps. The SCAQMD is also funding reforestation in the Station Fire burn area of the Angeles National Crest Forest.

South Coast Tree Partnership

- Planted over 400,000 reforestation seedlings with the US Forest Service and the National Forest Foundation
- Employed over 500 students to plant over 9,000 native trees in cities

The Sacramento Metropolitan AQMD developed its "Urban Forest Air Quality Development Program" as a measure in its State Implementation Plan for the federal 8-hour Ozone standard. The program is a targeted urban-forest management program to reduce the total emissions of biogenic volatile organic compounds (BVOC) from urban

trees. Through a combination of community education and governmental policy change over several years, the strategy shifts to the planting of low BVOC-emitting trees rather than medium- and high-emitting trees.

Looking Ahead at Vegetation – Local districts can develop urban tree planting guidelines. Where funding is available, districts can partner with organizations that employ at-risk youth to plant and potentially maintain the trees; this can increase the value of the project for the community, especially for projects employing youth in their own communities.

Appendix D2
Examples of Local Climate Protection / GHG Reduction Efforts

Stationary Sources

Project name: Reducing Black Carbon from Residential Wood Combustion in Sacramento County
Sector: Area Source - Rules
Approximate Date: 2008 – Present (Rules), 2006-2009 (RWC Changeout Program)

Project Description: The Sacramento Metropolitan Air Quality Management District's programs and rules to reduce wood smoke have had considerable climate benefits through reducing black carbon and other aerosols.

Rule 417 requires that new fireplace/stove installation starting 2008 must either be a gaseous fuel-fired unit, a pellet stove, or EPA-certified stoves/inserts.

Rule 421 prohibits wood and other solid fuel burning when PM2.5 concentrations are forecast to exceed the federal health standard during the winter period of November 1st through the end of February. Burning is prohibited except in EPA-certified wood stoves or pellet stoves on Stage 1 No Burn days; all wood-burning activities are prohibited on Stage 2 No Burn days. The annual amount of emission reduction from Rule 421 is 10.91% for fireplaces and 10.29% for woodstoves.

The Residential Wood Combustion (RWC) Changeout program provides monetary incentives for residents living in Sacramento County to replace their old uncertified wood-burning appliances (i.e., wood stoves and fireplaces) with new cleaner-burning ones. From 2006 to 2009, 2,866 RWC units were removed or replaced with gaseous/electric units. About 82% of fireplaces were replaced with gaseous units and 49% of woodstoves/inserts were replaced with gaseous units.

Results achieved: By 2030, the GHG emissions reduction potential from Rule 417 is about 14,000 tons/yr CO2-e; the GHG emissions reduction potential from Rule 421 is about 38,000 tons/yr CO2-e. Current reduction (2005 data) is about 33,000 tons/yr CO2-e. For the RWC Changeout program, the GHG emissions reduction from replacement or removal of 2,866 RWC units is about 1,500 tons/yr CO2-e.

Project name: Check Before You Burn
Sector: Stationary Sources
Approximate Date: Since 2003

Project Description: The San Joaquin Valley APCD has adopted and implemented a precedent-setting residential wood burning strategy, including mandatory no-burn days coupled with a robust incentive program that has already replaced 3,267 wood burning units with gas-fired units throughout the San Joaquin Valley air basin.

Results achieved: Since the implementation of mandatory no-burn days, and wood-burning change-out program, the San Joaquin Valley seen an improvement in PM2.5 concentrations and air quality during the winter season, and has attained the federal 24-hour PM-10 standard. These efforts also generated a significant reduction in carbon black, a potent global warmer.

Project name: Northern Sonoma County APCD – Stationary Source Permitting & Emissions Control
Sector: Stationary Source
Approximate Date: 2011 and ongoing

Project Description: In 2010, in response to the "Tailoring Rule" requirements by U.S. EPA, District staff led a group of federal, state, and local air regulators in the development of a model rule to implement GHG permitting and emissions control thresholds for major stationary sources. The District's version of the rule was approved by the District's Board of Directors and became effective on January 1, 2011.

Results achieved: Under its rule, the District conducted the some of the first permit reviews evaluating and controlling GHG emissions from major stationary sources. Two geothermal power plants were awarded preconstruction permits, and one major modification of a geothermal power plant has also received a permit. As part of the application process, Best Available Control Technology was required to reduce GHG emissions, and the plant proponents were required to provide energy efficiency analyses and plans to minimize operational emissions as well.

Emissions: Inventory Programs

Project Name: Municipal and Communitywide GHG Emission Inventories in San Luis Obispo
Sector: Emissions – Inventory Programs
Approximate Date: 2008 - 2010

Project Description: In 2008, the SLO County APCD Board approved the allocation of grant funds to hire a consultant who prepared emission inventories for municipal operations and communitywide sources for the seven incorporated cities throughout SLO County and develop a comprehensive countywide report on GHG emissions in our region. The city and countywide GHG inventories provide the foundation for policy and program development by estimating baseline emission levels against which future reductions can be measured. By identifying and quantifying the major sources of emissions, they provide valuable insights into where the greatest opportunities for emission reductions lie. This information is instrumental in the development of the GHG Reduction Plans to focus policy and program development on the most cost-effective strategies that best suit their communities. A total of $103,578 from mitigation funds

were used for the completion of the GHG emission inventories for all the cities in SLO County and the compilation of a comprehensive countywide GHG emissions inventory.

Results achieved: The final report of the GHG inventories for both the municipal and communitywide sources for all seven cities were presented to the APCD Board at their 2010 meeting. These inventories were used in the development of Climate Actions by local jurisdictions in San Luis Obispo County.

Project Name: Placer County APCD Climate Action/Greenhouse Gas Reduction Programs
Sector: Emissions - Inventory programs; Natural & Working Lands - Forests & Biomass
Approximate Date: 2006- current

Project Description: Greenhouse Verification Program - Verify GHG emission mandatory reporting and offset project documents.
AB32 ARB Early Action Measures - Provide technical assistance to ensure that emissions reductions proposed by the Scoping Plan are real, permanent and quantifiable, and that data collection and reporting are enforceable. The District has accepted oversight and enforcement responsibility of the CARB Landfill Methane Control Measure and reduction of PFCs from semiconductor regulations.
Climate Action Planning for Local Government Agencies – to assist local governments in developing community scale GHG emission inventories and projections, quantifying emission reductions from various policies and mitigation measures, and developing effective climate protection strategies.

Results achieved:

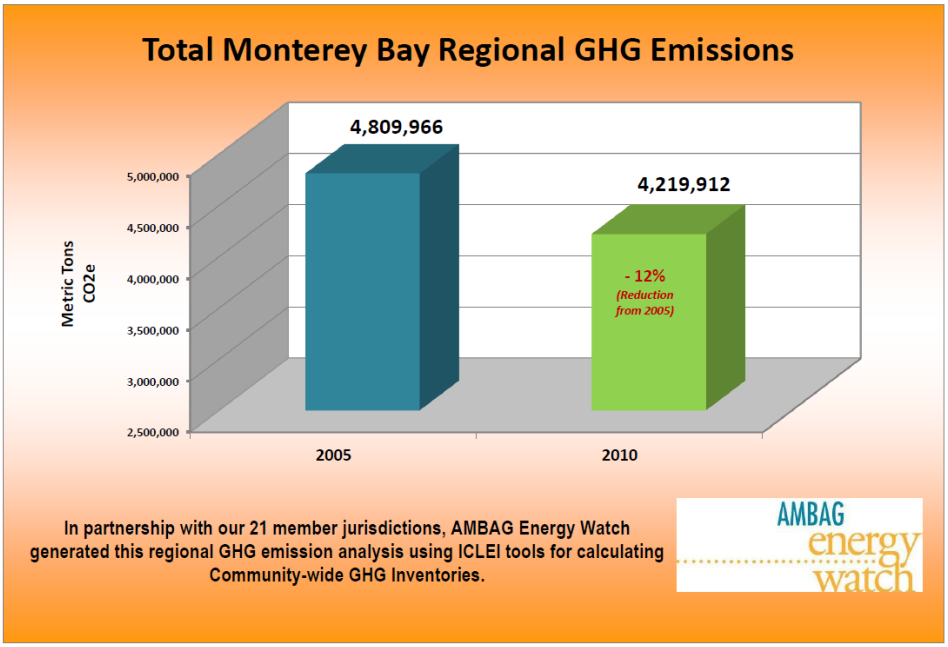
- District is accredited by the CARB as a verification body and with staff accredited as verifiers for the GHG Mandatory Reporting Regulation and the Forestry Compliance Offset Credit Protocol for Cap and Trade Regulation.
- Verification of “qualified” climate action plans which aim to support tiering of future development projects for purposes of CEQA review of GHG impacts include the required standard elements consistent with AB32 goals and the Governor’s Office of Planning and Research (OPR) CEQA Guidelines relating to GHGs.

Project name: Greenhouse Gas Inventories for Local Jurisdictions Prepared by the Association of Monterey Bay Area Governments (AMBAG)
Sector: Emissions – Inventory programs
Approximate Date: Ongoing

Project Description: The Association of Monterey Bay Area Governments (AMBAG) and Pacific Gas and Electric Company (PG&E) partnered to deliver the AMBAG Energy Watch Program, a regional leader in energy efficiency in Monterey, San Benito and Santa Cruz counties. One project implemented by the AMBAG Energy Watch program

was development of greenhouse gas inventories for the Monterey Bay region's 21 jurisdictions. AMBAG completed the following tasks for the 21 local governments:

- Local Government Operations 2005 Baseline GHG Inventories
- Community-wide 2005 Baseline
- Community-wide 2009 and 2010 GHG Inventories
- Periodic updates to Community-wide GHG Inventories for all 21 of AMBAG's member jurisdictions
- Ongoing GHG Inventory technical support and capacity-building for jurisdictional staff.



Results achieved: Completion of community-wide GHG inventories for the 21 local jurisdictions.

Project name: County wide emissions inventories
Sector: Emissions – Inventory Programs
Approximate Date: Since 2011

Project Description: The San Joaquin Valley APCD prepared two state of the art county-wide GHG emissions inventories for Kern and Kings counties to assist those counties in identifying sources of GHG emissions that could be addressed in their upcoming Climate Change Action Plans.

Results achieved: Provided much needed technical assistance to county planning agencies in quantify GHG emissions within their counties and allowing them to identify areas where GHG emissions can be reduced.

Project name: Consolidated Emissions Reporting
Sector: Emissions – Inventory Programs

Approximate Date: 2010 and ongoing

Project Description: The SCAQMD receives criteria and toxic pollutant data for facilities in their jurisdiction that are subject to annual emissions reporting (AER). Many of these facilities are also required to report their greenhouse gas emissions data to the Air Resources Board and the EPA. Reporting emissions data under these three programs utilizes much of the same information. To help SCAQMD facilities consolidate reporting information under these different programs and help provide consistent data reported under all the programs; the SCAQMD modified its AER software. The AER software modification was conducted in part from a grant the SCAQMD was awarded from the EPA to assist facilities in reporting GHG emissions. The modifications to the SCAQMD software help provide awareness of the state and federal GHG reporting requirements, provides a summary of reported information from the AER system which helps with GHG reporting requirements and provides an estimated summary of the facilities GHG emissions.

Results achieved: SCAQMD with help from an EPA grant modified its AER system to help facilities with GHG reporting requirements and provide consistency in information provided across emission reporting platforms.

Emissions: Banking & Trading Programs

Project name: Northern Sonoma County APCD - Greenhouse Gas Emission Reduction Credits
Sector: Emissions – Banking and Trading Programs
Approximate Date: 2013 and ongoing

Project Description: On July 30, 2013, the District's Board of Directors authorized the Air Pollution Control Officer to enter into an agreement with the California Air Pollution Control Officers Association (CAPCOA) to participate in CAPCOA's Greenhouse Gas Reduction Exchange (GHG Rx). The CAPCOA GHG Reduction Exchange (GHG Rx) is an online service that will be operated by CAPCOA and participating air districts. Its goal is to provide a secure, low-cost, high quality greenhouse gas exchange for emission reduction credits created in California. Financial resources invested in state will help create local jobs and realize needed air pollution co-benefits from projects in California. Northern Sonoma staff played a leadership role in the establishment of the CAPCOA GHG Rx, and the District was the first to sign a participation agreement.

The Board also reviewed a proposed Interim Policy under which District staff will review and approve applications for GHG reduction credits; it was approved on September 10, 2013. The Interim Policy establishes consistent procedures for District staff evaluating GHG reduction credits. These procedures ensure the credits issued will be *real*, *permanent*, *quantified*, *validated*, *enforceable*, and *additional*, and protect the integrity of credits that are listed on the CAPCOA GHG Rx. The Interim Policy requires District staff to use the CAPCOA GHG Rx criteria and guidelines to evaluate credit projects. This includes following approved credit project review protocols, and using the common

application forms developed for the GHG Rx. The terms of credit issuance are made enforceable through a legally binding agreement, whose form will be approved by County Counsel.

Under the Interim Policy, there are no fees charged for the review. Staff will propose a formal credit regulation and possibly fees within 18 months.

Project name: County wide GHG emissions inventories
Sector: Emissions - Banking Programs
Approximate Date: since 2012

Project Description: The San Joaquin Valley APCD as part of its Climate Change Action Plan adopted a rule to allow facilities to bank GHG emission reductions. Facilities can then potentially retire such emission reductions to provide GHG mitigation.

Results achieved: The District has issued over 20 GHG emission reduction credits for projects that reduced GHG emissions in the San Joaquin Valley. These credits can now be used by for future mitigation of GHG emissions increases.

Grants & Incentives

Project Name: Placer Air District Incentive Programs
Sector: Grants and incentives
Approximate Date: 2001-current

Project Description:
Technology Assessment Program
The Placer County Air Pollution Control District sponsors a Technology Assessment Program (TAP) to provide financial assistance in the form of grants for the development and evaluation of technologies which have the potential to reduce air pollution in Placer County, with a focus on energy efficiency and waste to energy technologies.

Wood Stove Exchange Program
Concern over the health effects from residential wood burning has been increasing over the past several years. Wood smoke consists of several pollutants, including: carbon monoxide and carbon dioxide, nitrogen dioxide, particulate matter such as black carbon, and other irritating and toxic components. The District provides incentives to home owners in order to help pay for the upgrade from older more polluting wood burning appliances to more efficient units which will reduce the pollution.

Clean Air Grant (CAG)
The PCAPCD Clean Air Grant program provides incentives to projects which are designed to reduce air pollutants such as criteria pollutants and carbon dioxide from mobile sources and other non-regulated sources. Funds used for this program are derived from DMV registration fees and land use air quality mitigation funds.

Results achieved:

- Replacement of 414 non-EPA certified wood-burning appliances;
- 75 on-road and off-road heavy duty engines being repowered, retrofitted, and replaced through the CAG program; and
- $14.4 million in funding has been awarded through the District's CAG program which has reduced approximately 1000 tons of pollutants including GHG since 2001.

Project name: Bay Area Air District Climate Protection Grants
Sector: Grants and Incentives
Approximate Date: 2007

Project Description: In 2007, the Bay Area Air Quality Management District implemented a Climate Protection Grant Program, awarding 53 Climate Protection Grants totaling $3 million to local governments and non-profit organizations in all nine counties of the Bay Area. This one-time grant program was funded from the Air District's general fund. These grants provided critical support to a wide range of projects that helped jump-start climate action planning and project implementation in the Bay Area. The Climate Protection Grants supported climate action in the following program areas:

1) Youth Outreach – engaging youth in promoting personal behavior changes that reduce GHG emissions in their homes, schools and communities.
2) Climate Protection Planning – integrating climate protection into general plans or developing stand-alone climate action plans.
3) Capacity-building – seed funding to establish permanent staffing positions to manage and coordinate energy and climate protection programs.
4) Regionalizing Best Practices – taking strategies that have proven their value at reducing GHG emissions on a small scale and ramping them up for broader application.
5) Fostering Innovation – incubating innovative new projects or policy approaches to reducing GHG.

Examples of activities funded by Climate Protection grants include:

<u>Acterra's Green@home Program</u>
Local resident volunteers are trained in conducting home energy audits and perform "house calls" on local neighbors to assess energy use, water consumption, and house weatherization. Based on the outcome of these mini-audits, the volunteers make recommendations for water and energy use improvements, and even install some devices, such as compact fluorescent bulbs and indoor clotheslines. Green@Home has a strong social marketing component, including lawn-signs that demonstrate a household's participation in the program. A total of 282 house calls were conducted and 63 tons of GHGs reduced.

BerkeleyFIRST

BerkelyFIRST launched the innovative idea of financing energy efficiency and solar PV installations through property taxes. This project served as a model for the statewide CaliforniaFIRST program and other property-assessed clean energy (PACE) programs.

TransForm's GreenTrip Program

TransForm, a land-use planning non-profit organization, developed GreenTrip as a certification program for multi-family, mixed-use development projects to encourage less car-dependence and reduce GHG emissions. Development projects undertake a rigorous certification process that scores a project based on how it supports transit, achieves traffic reductions, and manages parking availability. Since GreenTRIP was launched, 13 projects have been certified representing over 1,900 household units. In total, these GreenTrip certified projects have provided over 80,000 years of free transit passes and 24,000 years of car-share memberships for residents, with an annual savings of 12,715 total tons of CO2. Seven potential new projects are currently being evaluated, totaling another 2,400 units.

Marin Community Choice Aggregation

With its grant, Marin County launched a "Community Choice Aggregation" program, called Marin Clean Energy (MCE), which aggregates the electricity purchasing for business and residential electric customers throughout the County. PG&E continues to provide transmission, billing and maintenance and repair services to Marin customers, but MCE purchases electricity through third parties. By doing this, MCE can ensure that the electricity used by Marin County customers is 50-100% renewable. Most of the electricity purchased by MCE is wind, but also biomass and biowaste, solar and hydro. MCE has signed contracts to purchase over 70 megawatts of new renewable energy that will be built in California and is working on plans to significant solar projects in Marin County. Since 2010, Marin's Clean Energy program has reduced over 28,000 tons of GHGs.

Seed-funding Climate Staff

One of the most innovative approaches in the Air District's Climate Protection Grant Program was to provide grants to seed-fund permanent climate staff positions in local governments. Seven positions were funded throughout the Bay Area. These staff developed climate action plans and implemented many energy and water saving projects. As a result, these positions have become self-funding and all are still in place today.

Results from Climate Protection Grant Program (as reported by all grantees):

- Funded 21 local climate action plans and climate elements in general plans, creating a surge of climate action planning in the Bay Area
- Reduced over 54,000 tons of GHGs
- Created over 100 permanent and temporary jobs for adults and youth
- Over 500 public meetings convened, serving over 25,000 participants
- Over 7,000 youth actively engaged in climate protection

Project name: Northern Sonoma County APCD – Climate Protection Grants
Sector: Grants & Incentives
Approximate Date: 2009 and ongoing

Project Description: In 2009, the District's Board of Directors established a Climate Protection grant program, funded with a portion of the District's revenues from a surcharge on motor vehicle registration, to support education, outreach, and demonstration projects in reduction of GHG emissions associated with motor vehicle use. The District also implements a Community Program Fund, to address community concerns about air pollution, funded with penalties received from violations of air quality requirements, and other miscellaneous revenues. Some of the climate protection projects funded from these two grant programs include:

- Cool Schools – eCO2commute Student Trip Reduction Module for Healdsburg High School, with the Sonoma County Climate Protection Campaign. The CPC was funded to develop an educational module and provide implementation support for Healdsburg High School to offer a course in the development, implementation, tracking and analysis of a program to change student commute patterns. 2009
- Cool Schools – Waste Reduction Module at El Molino High School, with the Sonoma County Climate Protection Campaign. The CPC was funded to develop an educational module and provide implementation support for El Molino High School to offer a course in the development, implementation, tracking and analysis of a program to change student and faculty behavior surrounding waste, recycling, and composting. 2010
- CAPCOA Climate Change Forum – Conference in San Francisco, focusing on green business, effective land use strategies, the economics of climate change, and future challenges and opportunities. 2010
- Climate Protection: Everybody Profits – Conference in Sonoma County focused on preserving Agriculture in the face of climate change. 2011
- Strategies for Sustainability – City of Santa Rosa conference to engage and provide resources for local governments, businesses, and community leaders engaging in greenhouse gas reduction efforts, and climate adaptation. 2012
- CAPCOA GHG Reduction Exchange – Creation of an online service that will be operated by CAPCOA and participating air districts. Its goal is to provide a secure, low-cost, high quality greenhouse gas exchange for emission reduction credits created in California, create local jobs and realize needed air pollution co-benefits from projects in California. 2013
- Sonoma County Climate Action 2020 – Environmental review of the comprehensive GHG reduction implementation plan for the County and its cities. 2013

- Woodstove Changeout Program – The District is offering its third woodstove changeout program, providing rebates to residents who replace old, dirty woodstoves with cleaner, more efficient alternatives.

Project name: Care for Our Earth Teacher Grant Program
Sector: Grants and Incentives
Approximate Date: 2011 to present

Project Description: The Santa Barbara County Air Pollution Control District, in partnership with the Santa Barbara County Education Office and local utility companies, has for the last four years offered mini-grants of $200 each to teachers for educational programs that aim to save energy, cut traffic and pollution, or save water. For 2013, another program partner was identified, the grant amount was increased to $250, and a higher grant tier was added for more extensive projects.

Web links:
http://www.sbcapcd.org/teachers.htm
http://www.sbceoportal.org/teacherprograms/care-for-our-earth-grants/

Results achieved: In 2012, 26 grants were issued to 9 school districts; in 2011, 22 grants were issued to 9 school districts; and, in 2010, 15 grants were issued to 9 school districts. Examples of projects funded by these grants include:

- At Pine Grove Elementary School in Orcutt, fifth graders formed a “Power Down Patrol” to inspects classrooms at breaks to be sure lights and equipment were turned off.
- Students at Carpinteria Family School learned from Bici Centro and the Santa Barbara Bicycle Coalition how to ride safely and legally in traffic.
- Students at Righetti High School in Santa Maria produced articles, songs and other materials on the subject of pollution and global warming.
- Seventh graders at Vista de Las Cruces School in Gaviota calculated energy use for computer equipment and designed a program to save energy.

Project name: Grants for Integrated Alternative Transportation and Renewable Energy
Sector: Grants & Incentives
Approximate Date: 2012 and ongoing

Project Description: SCAQMD has funded several innovative projects that provide energy storage for new renewable energy generation used to support electric transportation. These include significant investments in:

(a) City of Industry for installation of up to 2MW for a solar PV carport, 64 Level 2 EV chargers and a fleet of electric vehicles to be used in a car-sharing program at the City of Industry’s Metrolink train station;
(b) CODA Energy LLC for the installation of up to 50kW for a solar PV rooftop system, 1.5MW battery energy storage system and the installation of 10 Level 2 EV charge stations at their Santa Monica facility;

(c) Siemens Industry, Inc. for the installation of up to 632 kW for solar PV carports, as part of a larger power-purchase agreement project with El Monte Unified School District with integrated electric charging stations and SmartGrid integration;
(d) Kinetic Traction Systems for the installation of up to 1 MW of flywheel energy storage to provide regenerative braking to trains and up to 2 kW of solar PV at LACMTA's Gold Line facility;
(e) UCR CE-CERT for the installations of up to 2 MW of solar PV and up to 2 MWh of lithium battery storage systems to facilitate EV charging sites throughout the City of Riverside and convert an existing diesel trolley to electric drive to link the campus and various city sites to the Metrolink station;
(f) OHR Energy for the installation of up to 1.4 MW of renewable fuel cell energy, an absorption chiller, EV chargers and the potential of energy storage;
(g) Eastern Municipal Water District for the installation of up to 300kW of renewable fuel cell energy at its Perris Valley Water Reclamation Facility; and,
(h) UTC Power for the installation of up to 400 kW of renewable fuel cell energy at one Albertson's Supermarket, an absorption chiller and up to six EV chargers.

Results achieved: These demonstration projects integrating renewables and battery storage help provide a path forward towards the challenges of addressing intermittency with renewables, helps integrate electric vehicles onto the grid, and helps reduce power needs during peak demand periods which is often supplied from inefficient fossil peakers.

Project name: Various San Joaquin Valley Incentive Programs
Sector: Grants and Incentives
Approximate Date: Since 1992

Project Description: Since 1992, the San Joaquin Valley APCD has spent over $500 million on a wide variety of voluntary incentive programs, leveraging another $500 million from program participants for a total investment of more than $1 billion in clean-air projects in the Valley. From lawnmower replacement programs, transit projects and VMT reduction efforts to light-duty vehicle repair programs and heavy-duty diesel engine replacement programs, the District has been successful in reducing both criteria pollutants and greenhouse gases. The District's has successfully replaced or retrofitted thousands of heavy-duty diesel–powered units with newer, low-emission equipment, including: on-road trucks, off-road equipment, school buses and agricultural irrigation pump engines.

Since 1992, the San Joaquin Valley APCD has provided funding to Valley residents and businesses to assist in not just bringing alternative fuel vehicles to the region, but reducing vehicle miles traveled.

The District's Remove II program has provided financial incentives for projects that reduce emissions from light-and-medium duty motor vehicles; promotes new technologies that reduce vehicle miles traveled; and promotes alternative transportation measures. The current Remove II program components include: E-Mobility

(Telecommunications); Bicycle Infrastructure; Public Transportation and Commuter Vanpool Passenger Subsidy; Alternative Fuels Mechanic Training; Light-and-Medium-Duty Vehicles (Drive Clean! Rebate Program); Polluting Automobile Scrap and Salvage Program.

In 2011, the District began providing incentive funding for Advanced Transportation and Alternative Fueling projects to public agencies and public educational institutions located within the geographic boundaries of the San Joaquin Valley air basin through its Public Benefit Grants Program (PBGP).

Results achieved: The San Joaquin Valley APCD's incentive programs have garnered substantial greenhouse gas reductions through the elimination of over 4,500 tons of particulate matter (black carbon). In addition, the San Joaquin Valley APCD focuses significant resources and funding towards the electrification of equipment such as agricultural irrigation pump engines which have substantial greenhouse gas benefits.

The San Joaquin Valley APCD's Ag Pump Electrification Program is a partnership with the agricultural industry and the local electric utilities (PG&E/SCE). This program replaced over 2,000 diesel agricultural irrigation pump engines with electric motors. As a result this program resulted in more than 400,000 tons of CO2e.

Project name: Technology Advancement Program
Sector: Grants and Incentives
Approximate Date: Since 2010

Project Description: The San Joaquin Valley APCD adopted its Technology Advancement Program to encourage the next generation of emissions reducing technologies. The program focuses on mobile sources, waste solutions, and renewable energy and has funded projects including truck and tractor electrification and hybridization, as well as waste gas projects including renewable natural gas for vehicle fuels projects. The projects selected work to bring new technologies and processes from the demonstration phase to being ready for commercialization and deployment in the broader market.

Results achieved: San Joaquin Valley APCD's Technology Advancement Program:

- Focuses on Mobile Sources and Renewable Energy
- Actively seeks projects with greenhouse gas reductions, and considers greenhouse gas benefits in project selection.
- Program has awarded funding for 8 heavy-duty on- and off-road mobile hybridization and electrification projects for over $2.7 million
- Program has awarded funding for 6 biogas projects for over $2.3 million including biogas-to-fuel projects

Outreach & Education

Project name: Healthy Air Living Schools Program

Sector: Outreach – guidance and training
Approximate Date: Since 2012

Project Description: The San Joaquin Valley APCD, in partnership with local school districts and asthma coalitions, has developed the Healthy Air Living Schools program designed to reduce traffic and vehicle idling around school sites. Most students in San Joaquin Valley schools live within one mile of their school campus, yet 43 percent of these students are driven to school in private vehicles. Through the Healthy Air Living Schools Program, the San Joaquin Valley Pollution Control District hopes to reduce both school related vehicle-miles-traveled and school site vehicle idling, which in turn reduces greenhouse gases and improves student health.

Results achieved: The Healthy Air Living Schools Program provides free to any school in the San Joaquin Valley Air Basin the following:

- Education and training to school staff regarding the effect of vehicle traffic and idling on students.
- Bilingual educational materials and small incentives to schools for distribution to parents regarding the effects of vehicle traffic and idling on air quality & children's health.
- "No-Idling" signs for schools to use where parents pick up students after school.
- Access to the District's Real-time Air Advisory Network system.
- Air Quality Education Curriculum Kits.
- Information assisting parents in finding alternative transportation options such as *Safe Routes to Schools*, the *Walking School Bus* and *Bicycle Rodeos*.
- Information encouraging teacher's to apply for the Healthy Air Living Schools teacher mini-grant program to fund small classroom projects related to idling and air quality.

Project Name: Climate Change Outreach
Sector: Outreach – Materials, conference, websites
Approximate Date: 2006 - present

Project Description: As defined in the SLO County APCD's Climate Change Program adopted by our Board in 2005, working with local governments to join the Cities for Climate Protection program and expanding public awareness on climate change are critical components to reduce our region's carbon footprint. Since 2006, the APCD's Annual Outreach Plan has defined programs, desired outcomes and strategies to assist cities and county agencies, coalition partners and the general public in efforts to reduce GHG emissions to meet the goals of AB 32. Key outreach programs include 1) Central Coast Clean Cities Coalition (C5) that promotes the use of alternative fuel vehicle technologies; 2) Food Miles Campaign to preserves local agricultural operations and reduce vehicle miles traveled (VMT) in transporting food to and from our county; 3) SLO Car Free program that provides incentives for car-free, care-free visitors coming to the Central Coast; and 4) Energy Awareness program implemented in partnership with the County of San Luis Obispo in increase public awareness of the environmental and cost-saving benefits of reducing energy use and switching to renewable energy sources.

Results achieved: San Luis Obispo County has received an official "Clean Cities" designation as a result of the significant efforts of the C5 group to promote clean fuels use in our county. The SLO Car Free website received over 10,000 unique visitors in the past year alone, and over 2,000 people have registered to travel to SLO without their car. The APCD has partnered with SLO County for the past 2 years in sponsoring a countywide "Energy Event" to promote energy conservation and renewable energy.

Project name: Electric Vehicle Initiative – Infrastructure Guidelines
Sector: Outreach – Guidance & Training
Approximate Date: 2012

Project Description: The Northern Sonoma County APCD worked with Sonoma County Fleet Operations, Permit Resource Management Department, Risk Management, County Counsel's office, the Sonoma County Water Agency, the Sonoma County Regional Climate Protection Agency, and others to develop guidelines for the permitting and installation of electric vehicle charging infrastructure. These guidelines served as a model for the subsequent development of guidelines by the California Plug-in Electric Vehicle Collaborative, as well as draft interim guidelines from the Governor's Office of Planning and Research, both of which efforts District staff played a role in. Guidelines available at www.pevcollaborative.org

Project name: High School and Senior Citizen Conferences
Sector: Outreach and Education
Approximate Date: Ongoing from 2010

Project Description: The SCAQMD has held several conferences for high school students to promote the benefits of clean air and the mission of the agency. Topics included relevant information on air quality, respiratory health and clean air tips for the home, family and community; and exhibits and clean vehicle displays. GHGs were also discussed at the 2013 High School conference, such as the Alliance for Climate Education (ACE) gave a presentation on Climate Change. Global Inheritance had two interactive exhibits in the Expo Hall to educate students about energy choices and their effect on the environment (climate change and criteria pollutants). Two conferences were held for high school students in 2010 and 2013. 8,000 students attended the 2010 conference, and 7,000 attended the 2013 conference. Additionally, SCAQMD participates in other school educational conferences, such as JPL Climate Day, for climate change and air quality.

Results achieved: Outreach to high school students and residents to provide education that enable conference attendees to make choices that benefit air quality and greenhouse gas emissions.

Plans

Project name: 2012 Metropolitan Transportation Plan and Sustainable Communities Strategy

Sector: Plans
Approximate Date: 2012

Project Description: In December of 2012, the Butte County Association of Governments (BCAG) Board of Directors approved the areas first Sustainable Communities Strategy (SCS) as a component of the 2012 Metropolitan Transportation Plan (MTP). The 2012 MTP/SCS sets forth a plan to reduce the Butte County regions per capita greenhouse gas emissions from passenger vehicles by 2% for the years 2020 and 2035, from 2005 levels. These reductions are achieved by integrating the areas land use, housing, and transportation in a manner that reduces per capita travel and emissions from passenger vehicles, while managing an estimated increase of 110,000 persons, 47,000 new housing units, and 41,000 additional jobs.

Project name: 2012 City of Chico Climate Action Plan
Sector: Climate Action Plan
Approximate Date: 2012

Project Description: The City of Chico adopted their Climate Action Plan (CAP) in November 2012 which establishes a goal to reduce greenhouse gas emissions (GHG) by 25% by 2020. The CAP is a strategy for Chico to grow in a sustainable way that meets GHG reduction goals while continuing to allow for the public and private development and redevelopment that will keep Chico a vibrant and livable community. The City General Plan policies incorporated into the plan include reducing community-wide greenhouse gas emissions through various actions in the transportation, energy, and waste sectors.

Project name: City of Gonzales Climate Action Plan
Sector: Plans – Climate Action Plan
Approximate Date: Ongoing

Project Description: The City of Gonzales adopted their Climate Action Plan in February 2013. The plan is a product of the “Gonzales Grows Green” Sustainable Community Initiative, an outgrowth of the City’s Vision Statement adopted in 2005. The plan provides energy use, transportation, land use, water use, and solid waste strategies to reduce Gonzales’ greenhouse gas emissions levels to 15 percent below 2005 levels by 2020.

Project name: Monterey Region In-Progress Local Climate Action Plans
Sector: Plans – Climate Action Plans
Approximate Date: Ongoing

Project Description: The counties of: Monterey, San Benito and Santa Cruz and the cities of: Capitola, Monterey, and Watsonville are in the process of developing Climate Action Plans.

Project name: City of Santa Cruz Climate Action Plan

Sector: Plans – Climate Action Plan
Approximate Date: Ongoing

Project Description: The City of Santa Cruz adopted their Climate Action Plan in June 2012. The plan is a strategy for Santa Cruz to grow in a sustainable way that meets GHG reduction goals while continuing to allow for the public and private development and redevelopment that will keep Santa Cruz a vibrant and livable community. The City General Plan policies incorporated into the plan include reducing community-wide greenhouse gas emissions 30 percent by 2020 and 80 percent by 2050 and for all new buildings to be emission neutral by 2030.

Project Name: Cities of San Luis Obispo County Climate Action Plans
Sector: Plans
Approximate Date: 2011 - 2014

Project Description: In November 2011, the SLO County APCD Board approved a three-party funded project for the development of the GHG Reduction Plans for six cities. The County of San Luis Obispo and the City of San Luis Obispo used federal stimulus funds to develop and complete their Climate Action Plans in 2011 and 2012 respectively. By collaborating with Pacific Gas & Electric and the Southern California Gas Company, the APCD was able secure a total of $405,018 for the development of climate action plans for the remaining six cities in our region. Through a collaborative effort, a consultant updated the emissions inventory and 2020 forecast, completed a gap analysis, developed GHG reduction measures, developed individual city climate action plans and conducted public outreach for each of the six cities. Draft plans are currently developed and the project is near completion. Through the APCD's City/County GHG Stakeholder Committee, agency staff will work on plan implementation as well as seeking to secure additional grant funding for program implementation.

Results achieved: The County and the City of San Luis Obispo have approved Climate Action Plans that are currently being implemented. The remaining six cities have draft (soon to be final) climate action plans that are scheduled to go before their Councils for consideration by the end of the year. These plans serve as a roadmap for each local jurisdiction to meet the AB 32 goals of reducing GHG emissions to the 1990 levels by 2020.

Project name: Sustainable Community Strategies under Development by the Association of Monterey Bay Area Governments (AMBAG)
Sector: Plans – Transportation Land Use/location strategies
Approximate Date: Adoption expected in June 2014

Project Description: AMBAG is currently developing Sustainable Community Strategies (SCS) to meet the regional greenhouse gas (GHG) targets reductions from the automobile and light truck sectors for 2020 and 2035. The preferred SCS scenario was approved by the AMBAG Board in September 2013. The scenario includes mixed

land use to support transit infrastructure, encourages economic development and growth, and has been evaluated to ensure regional and inter-county consistency. The final Metropolitan Transportation Plan/SCS and accompanying Environmental Impact Report is scheduled for adoption in June 2014.

Project Name: Preliminary Sustainable Communities Strategy
Sector: Plans
Approximate Date: 2009 – 2010 & 2013 - 2014

Project Description: In 2010, the SLO County APCD was involved in the San Luis Obispo County Council of Governments (SLOCOG) early efforts to develop a *Preliminary Sustainable Communities Strategy (PSC)* as part of the 2010 Regional Transportation Plan (RTP). The RTP is a comprehensive plan guiding transportation policy for the region and makes recommendations concerning improvements to the existing transportation network of highways, transit, air and water, rail and bicycling. The integration of a PSCS into the 2010 RTP provided local jurisdictions the opportunity to become acquainted with the requirements of SB 375 to determine methods to reduce GHG emissions through decreased vehicle miles traveled as a result of a comprehensive intermodal transportation investment strategy. The PSCS was approved as part of the 2010 RTP and demonstrated an eight percent (8%) reduction in GHG emissions. The PSCS is currently serving as the roadmap for SLOCOG in their official efforts to implement requirements of SB 375 in the 2014 RTP. Once approved by SLOCOG Board, the SCS will be forwarded to ARB for evaluation and determination if the plan will achieve the GHG emission reduction targets.

Results achieved: Through the development of the PSCS, SLOCOG was able to demonstrate an achievable GHG emission reduction of eight percent (relative to 2005) for the 2020 and 2035 target dates of SB 375.

Project name: Climate Change Action Plan
Sector: Climate Action Plan
Approximate Date: Since 2008

Project Description: In August 2008, the San Joaquin Valley APCD adopted its Climate Change Action Plan. This plan led to the development of guidance to assist Lead Agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project specific GHG emissions on global climate change.

As part of the its Climate Change Action Plan the San Joaquin Valley APCD developed numerous Best Performance Standards for stationary sources and development projects that identify mechanisms for projects to reduce their GHG emissions to levels such that their GHG emissions are not significant for purposes of CEQA review, streamlining the CEQA review process while avoiding hundreds of thousands of tons of GHG emission increases.

Results achieved: The San Joaquin Valley's Climate Change Action plan has resulted in a streamlined approach to addressing GHGs as part of the CEQA review process and has resulted in hundreds of thousands of tons of avoided GHG emissions.

Project name: San Mateo County Regionally Integrated Climate Action Planning Suite (RICAPS)
Sector: Climate Action Plans (Tools)
Approximate Date: 2010

Project Description: Climate action planning is a complex process that can be cost prohibitive for cities to undertake on their own. Because of this, the San Mateo City and County Association of Governments (C/CAG), with support from the Bay Area Air Quality Management District and PG&E, has developed the Regionally Integrated Climate Action Planning Suite (RICAPS) to aid cities and towns in San Mateo County in developing their own climate action plans. RICAPS is a suite of tools aimed at streamlining and facilitating the climate action planning process. The RICAPS tools include:

- Climate Action Plan Template – a 60 page document that contains all of the elements necessary to create a robust climate action plan
- Manual of Calculations of Proposed Measures – a menu of 40 potential GHG reduction measures to include in the climate action plan, with county-based assumptions that produces estimated GHG reductions, and financial costs and benefits for each measure
- Online Calculation and Measurement Tool – a databank to input and store the key data and assumptions for each measure, as well as keep track of your progress over time

To complement the RICAPS tools, the C/CAG has set up a Multi-City Working Group that meets monthly to share information and coaching on how to implement each stage of the climate action planning process.

Results achieved:

- So far, six local climate action plans have been developed and adopted using the RICAPS tools
- Four additional climate action plans are in advanced stages of development

Project name: City of Santa Barbara Climate Action Plan
Sector: Climate Action Plans
Approximate Date: Adopted September 18, 2012

Project Description: The City of Santa Barbara's Climate Action Plan (Plan) identifies a communitywide greenhouse gas emissions inventory and forecasts future emissions generation. Strategies to reduce carbon dioxide and other greenhouse gas emissions are identified in the areas of energy, travel and land use, vegetation, waste reduction, and water conservation. The Plan also provides an overall assessment of Santa

Barbara's vulnerability to climate changes and identifies strategies to begin planning for adaptation to climate change effects.

Web link:
http://www.santabarbaraca.gov/services/planning/mpe/climate.asp

Results achieved: The plan identifies carbon emissions targets for the years 2020 and 2030 consistent with established State and regional targets, and with City General Plan policies directing sustainability and climate protection measures. The analysis finds that with identified strategies, reduced emissions would meet and surpass state emissions targets for overall emissions level in the year 2020 (1990 emission level), and vehicle-related emissions in 2020 and 2035 (2005 emission level).

The plan provides for monitoring and reporting on the implementation of action measures for carbon emissions reduction and adaptation planning. Updated reports on the citywide carbon emissions inventory and climate change information will be provided every 5 years, and the entire plan is slated to be updated in 2030.

Project name: GHG mitigation through local planning and development
Sector: Climate Action Plans / General Plans Transp.- Land Use/location strategies
Approximate Date: Continuous

Project Description: The SMAQMD has been actively involved in local government efforts to incorporate GHG mitigation into planning and land-use development, working through both informal partnerships and CEQA.

The SMAQMD has worked with all local jurisdictions within the air district to develop Climate Action Plans. Adopted plans include Elk Grove (2013), Citrus Heights (2011), City of Sacramento (2012) and County of Sacramento (govt. sector, 2011); plans in development include County of Sacramento (community sector) and City of Folsom. In addition, SMAQMD staff has worked with both the City and County of Sacramento to develop project-specific thresholds of significance for GHGs to limit emissions from new developments.

In its role as a commenting agency through CEQA, the SMAQMD has also successfully motivated local jurisdictions within Sacramento County to address climate change impacts in new developments (e.g. Cordova Hills, Southeast Connector, Elverta SPA, Aspen 1, etc.). Specific GHG emission reduction strategies have included energy efficiency (e.g. tankless water heaters), renewable generation (on-site solar), transportation demand management (transportation management agency memberships, on-site ride-matching, employee transit subsidies, guaranteed rides home for alternative transportation users, etc.), and design and infrastructure improvements (e.g. sidewalks, bike lanes, more connectivity).

The air district is also a founding member of the Sacramento Area Climate Partnership, which has led to collaborations with the Sacramento Municipal Utility District and local

jurisdictions on climate action planning efforts (such as developing a baseline inventory for climate action planning and potential GHG reduction measures). The SMAQMD has also been working with the other air districts within the Sacramento Federal Nonattainment Area to develop regional thresholds of significance for GHG emissions. The SMAQMD also produces and updates a *Recommended Guide to Land Use Emission Reductions* that incorporates CalEEMod and GHG mitigation measures for use by project proponents.

Project name: Transportation Plan/Sustainable Communities Strategy (MTP/SCS 2025)
Sector: Plans
Approximate Date: 2012 - 2035

Project Description: The Transportation Plan/Sustainability Communities Strategy for 2035 (MTP/SCS) is an important evolutionary milestone along the path towards inclusive, equitable, performance-based planning that the Sacramento Council of Governments (SACOG) began about a decade ago. As the Sacramento region's first MTP/SCS adopted under Senate Bill 375, this plan has many unique features to link regional growth patterns, smart land-use principles, and the transportation system. One key feature includes reductions in per-capita passenger vehicle greenhouse gas emissions that exceed the minimum targets established for the SACOG region by the California Air Resources Board.

Results achieved: Below are the areas in which reductions will be realized from the Scoping Plan for 2020, and SACOG's contribution toward those reductions:

Proposed MTP/SCS Plan Area Share of Scoping Plan Measures (MMtCO2e)

Transportation – Includes Fuel Efficiency, Low Carbon Fuels, etc.	1.902
Electricity Efficiency – Includes Million Solar Roofs, and Building and Appliance Efficiency	1.72
Natural Gas Efficiency – Includes Solar Hot Water, and Building and Appliance Efficiency	0.25

Sources: California Air Resources Board (ARB) 2010. 2020 Greenhouse Gas Forecast Methodology Retrieved July 2011 and SACOG (2011). MTP/SCS.

Project name: Sonoma County Regional Climate Protection Authority - Climate Action 2020
Sector: Plans – CAP
Approximate Date: 2013 - 2015

Project Description: Climate Action 2020 is a collaborative effort among all 9 cities and the County of Sonoma to take further actions in reducing GHG emissions community-wide and respond to the threats of climate change. RCPA will work with communities to develop a comprehensive and detailed plan for each jurisdiction that will identify measures to reduce GHGs from sources including building energy (electricity and natural gas), transportation, water use and transport, waste, wastewater and agriculture. This detailed plan is called a Community Climate Action Plan, and known locally as Climate Action 2020.

A main goal of Climate Action 2020 is to identify specific, implementable actions that each jurisdiction can take to ensure their communities remain vibrant and resilient in an ever changing climate. Overall, Climate Action 2020 will benefit Sonoma County communities by providing a comprehensive assessment of GHGs and emissions-reduction strategies. Since each community within Sonoma County is unique, each community is going to have different concerns and priorities within their community.

Project Name: Land Use Planning & California Environmental Quality Act (CEQA)
Sector: CEQA
Approximate Date: 1996 – Continuous

Project Description: As a commenting agency, the Sacramento District provides assistance to local jurisdictions on land use development projects subject to the California Environmental Protection Act (CEQA) to help reshape and guide community land use decisions toward sustainability and quality of life. To mitigate the project's related GHG emissions, the District assists lead agencies in determining when and how

new development can mitigate GHG impacts to avoid or lessen significant impacts on the environment and public health. The District provides recommendation of measurable standards and mitigation to reduce construction- and operational- related pollutant emissions.

In addition to working with ARB for the proposed statewide programs and regulations, the District is working with other local air districts in Sacramento area to develop a Sacramento regional GHG significant threshold for land use development projects and being in the development commitment to develop the GHG mitigation quantification guidance under CAPCOA Board's direction.

Results achieved:

- Verification of the adequacy of GHG analyses prepared for land use development;
- Mitigation measures are recommended to reduce potential GHG impacts from land use development project;
- Verification of emission reduction claims resulting from State mandated programs and proposed mitigation measures; and
- Coordination with participating air districts under CAPCOA direction to develop the GHG mitigation quantification guidance.

CEQA

Project Name: GHG CEQA Thresholds of Significance for Proposed Land Use Projects
Sector: CEQA - Multiple (Stationary Sources, Transportation & Energy)
Approximate Date: 2012

Project Description: The SLO County APCD's CEQA Air Quality Handbook serves as a guide for evaluating and mitigating the potential air quality impacts of projects subject to review under the California Environmental Quality Act (CEQA). In March 2012, the SLO County APCD Board adopted GHG CEQA Thresholds of Significance for residential, commercial and industrial projects, to assist lead agencies in determining the significance of GHG emission impacts from new land use projects subject to CEQA review. Adoption of significance thresholds eliminates the need for projects below the thresholds to quantify and mitigate GHG emissions, provides consistency and more certainty to the review process, and helps our region contribute its fair share toward meeting the statewide GHG reduction targets mandated by AB 32.

Results achieved: The CEQA greenhouse gas thresholds were approved by our Board in March 2012 and currently the County and seven cities in our region are implementing the thresholds. Implementation of the thresholds by lead agencies in SLO County is expected to reduce overall costs for new land use development by streamlining the review process for smaller projects and reducing the number of projects subject to GHG analysis and mitigation requirements.

Energy

Building Energy Efficiency & Lighting

Project name: Acterra Green@Home Program
Sector: Energy – Building Energy Efficiency
Approximate Date: 2007

Project Description: Acterra is a non-profit organization that provides hands-on program activities to reduce the environmental impact of communities in the Silicon Valley area. Acterra's developed the Green@Home program to implement local strategies that increase the energy efficiency of residential buildings. The program is free, provides home energy assessments to residents of Santa Clara County and offers online software that enables participants to create a personalized analysis of their homes' overall energy use. The software also provides recommendations on how to increase household energy efficiency that result in financial savings to the consumer. Acterra is currently implementing the Green@Home program with partnerships in the Cities of Palo Alto, Mountain View, Menlo Park, Cupertino, and Sunnyvale. Local resident volunteers are trained on conducting household energy audits and creating awareness of sustainable living practices. Personal 2-hour house visits from locally trained neighborhood volunteers are scheduled to assess energy use, water consumption, and house weatherization. Based on the outcome of these audits, the volunteers make recommendations for water and energy use improvements, and even install some devices, such as compact fluorescent bulbs and indoor clotheslines. Green@Home also has a well-designed marketing component that promotes energy saving through consumer behavior, including: yard-signs for all participants, commitments to use reusable shopping bags, informational handouts, and support groups to share ideas, raise questions, or give referrals to contractors and product vendors.

Results achieved: Through its city partners and local residents, Acterra's Green@Home program has been effective at heightening public awareness, increasing participation, and creating local solutions to climate change, which include:

- 1,500 home energy audits conducted
- 450 trained neighborhood volunteers with 8,400 hours in the field
- Providing custom home energy saving plans
- Strategy integration into local climate action plans
- Household savings of $50 to $150 per year in energy efficiency and becoming energy conscious
- Program resulting in GHG reductions of 680 metric tons per year

Project name: Energy Action Strategies for Local Jurisdictions Prepared by the Association of Monterey Bay Area Governments (AMBAG)
Sector: Energy
Approximate Date: Completed

Project Description: AMBAG Energy Watch has developed draft Energy Action Strategy plans for the local jurisdictions to quantify and reduce residential and non-residential energy consumption and related GHG emissions. These standalone plans provide analyses of annual energy consumption patterns and contain a range energy efficiency and conservation initiatives that are feasible and appropriate within each unique community. For those jurisdictions who ultimately decide to develop and adopt comprehensive Climate Action Plans, the initiatives comprising the Energy Action Strategies can be easily and efficiently integrated into the energy chapter(s) of the Climate Action Plans.

Project name: Energy Efficiency Programs Implemented by the Association of Monterey Bay Area Governments (AMBAG) Energy Watch Program
Sector: Energy – building energy efficiency
Approximate Date: Ongoing

Project Description: AMBAG Energy Watch and PG&E provide rebates and incentives for projects that reduce energy use. Recently, AMBAG launched a program directed at improving energy efficiency for local agricultural businesses. AMBAG Energy Watch also installs energy efficient equipment at non-profits, school districts, special districts, municipal facilities, and hospitality facilities.

Results achieved: As of September 2013, the combined direct installation program, including the agriculture pilot, has installed equipment projected to generate annual energy savings of 1,116,393 kWh.

Project name: Home Energy Conservation Program
Sector: Energy – Building energy efficiency
Approximate Date: 2012-ongoing

Project Description: The SMAQMD collaborated with Sacramento Association of REALTORS® (SAR), Rebuilding Together Sacramento, Sacramento Habitat for Humanity, and the University of California Davis School of Civil and Environmental Engineering to tackle the problem of weatherizing housing for low-income residents in the Sacramento Region. The Home Energy Conservation Program improves comfort, safety, and health for residents, saves energy and money, and achieves significant reductions in GHG emissions. Beginning in April 2012, the program has upgraded over 100 single-family homes. To date, most of the homes have been in low-income neighborhoods within the City of Sacramento.

Using a combination of paid and volunteer workers, Rebuilding Together Sacramento and Sacramento Habitat for Humanity perform Tier 1 weatherization upgrades that include installing compact florescent lights, weather stripping, window caulking, outlet sealers, water heater blankets, water heater pipe insulation, and low-flow showerheads. Cost-benefit analysis was used to select weatherization components that delivered the greatest GHG emissions reductions for the least cost.

The University of California, Davis, evaluates data on weatherized homes to quantify energy savings. GHG emissions reductions are estimated at approximately one ton per year per home. The total cost per home including materials, labor, and administrative overhead averages $300. Residents are also provided information on other energy saving strategies. At the end of 2013, a survey will be conducted to determine whether program recipients changed their energy consumption behavior and if they experienced the benefit of reduced energy bills and increased comfort.

Low-income households spend an average of 14% of their income on energy, compared to 3.5% for most other households. With the average utility bill of program recipients running close to $150 per month, simple weatherization measures can result in savings of up to $360 annually.

Through its leadership role with Clean Cities, the District is working closely with its numerous partners in the region to build awareness of weatherization opportunities that are available to the residents of the Sacramento Region. There have been a growing number of extreme heat events over the past decade, and low-income individuals are especially vulnerable. Residents, especially seniors, can benefit immediately by reducing their vulnerability to extreme-heat events.

Results achieved: The Home Energy Conservation Program has upgraded about 100 homes since its inception, achieving approximately one metric ton of GHG emissions reductions per home per year, at a cost of $300 per home. These GHG emissions reductions will increases with time at no additional cost.

Project name: Santa Barbara County's emPowerSBC program
Sector: Energy – Building Energy Efficiency
Approximate Date: Fall 2011-present

Project Description: EmPowerSBC helps homeowners countywide overcome obstacles to making energy saving improvements to their homes by making home upgrade projects easier and more affordable through incentives, financing, qualified contractors and expert energy advice. Homeowners can take advantage of high-dollar utility rebates and unsecured loans with low rates and flexible terms of loan repayment to allow for manageable monthly costs.

EmpowerSBC's eligible projects range from basic upgrades to more extensive additions of solar water heating and electric system upgrades. The basic upgrades include air sealing (filling holes, cracks and leaks), adding attic insulation, duct sealing, hot water pipe insulation and low-flow showerheads.

Web link:
http://www.empowersbc.org/home

Results achieved: In its first year and a half, emPowerSBC has contacted more than 3,000 homeowners and developed 350 leads for local contractors who have $1.7 million in retrofits going in 217 homes.

One participating homeowner was able to reduce their overall energy use by 52% as a result of home upgrades including whole house air sealing, R38 attic insulation, dual-paned windows, a high-efficiency furnace, and a tankless water heater. The homeowner received a $4,000 rebate from the statewide Energy Upgrade California program and a $500 federal tax credit. They financed the remaining project costs with a low-interest emPower Home Energy Upgrade Loan.

Project name: Sonoma County Energy Watch
Sector: Energy – Building Energy Efficiency
Approximate Date: 2009 ongoing

Project Description: Sonoma County Energy Watch (SCEW) is a local government partnership between the County of Sonoma and Pacific Gas and Electric Company (PG&E) designed to help save money and energy while reducing harmful impacts on the climate. It was established in January of 2009. SCEW provides energy efficiency services to local governments, nonprofit organizations, small businesses and special districts in the County of Sonoma who are PG&E customers. Services include free energy audits, energy efficiency consulting, incentives and rebates, and financial consultation.

- **Free Energy Audits -** SCEW, in partnership with The Energy Alliance Association, provides free, no-obligation lighting audits to determine opportunities for savings.
- **Incentives & Rebates -** SCEW offers rebates for direct install projects that are much higher than if customers were to approach PG&E directly. Core program rebates are also available for projects that reduce natural gas use. Building retrofit measures, including HVAC, boiler, chiller, and other improvements may also receive rebates.
- **Energy Efficiency Consulting -** SCEW will provide free technical consultation and best practices advice in the areas of energy efficiency and conservation.
- **Financial Consultation -** There are several zero and low interest loans available to help pay for energy efficiency projects. SCEW can assist customers in finding funding and financing for project implementation.

Results achieved: Since 2009 SCEW has disbursed over $1 million in incentives for over 170 individual projects that have saved roughly 5,236,968 kWh, 16,570 therms, and 1,265 metric tons of CO2 equivalent throughout the County—the equivalent of removing up to 211 cars from the road for a year. It also created an estimated 239 jobs.

Specific Example: YouthBuild Santa Rosa – Lewis School Retrofit. YouthBuild Santa Rosa, a program of Community Action Partnership of Sonoma County (a nonprofit organization) provides education, job skills training and leadership development for youth aged 16-24 who do not have a high school diploma. With partner John Muir Charter School, they assist youth in earning a high school diploma. SCEW worked with YouthBuild Santa Rosa on a lighting retrofit at the old Lewis School, which resulted in substantial energy and annual cost savings for the school. www.sonomacountyenergy.org

Project Shapshot

Total Project Cost: **$7,160**
Program Incentive: **$3,599**
Customer Cost: **$3,560**
Annual Savings: **$4,387***
Annual kWh Saved: up to 24,000
Avoided emissions: 5.43 MTCO2e
Payback period: **0.81 yrs**

*Annual savings based on roughly $0.18 per kWh

Project name: Sonoma County Comprehensive Energy Program
Sector: Energy – Building Energy Efficiency & Alternative Energy
Approximate Date: 2009 ongoing

Project Description: When the Sonoma County Board of Directors approved aggressive GHG reduction targets in 2006 (25% below 1990 levels by 2015), the Board directed County staff to develop a comprehensive strategy to: (1) reduce GHGs; (2) save money; and (3) replace worn-out equipment. The Department of General Services, with contract support, developed a comprehensive inventory of facility energy use and approximately 101 energy efficiency measures that met all three program objectives. Of these, the County selected 39 measures to implement at 24 County buildings. These included:

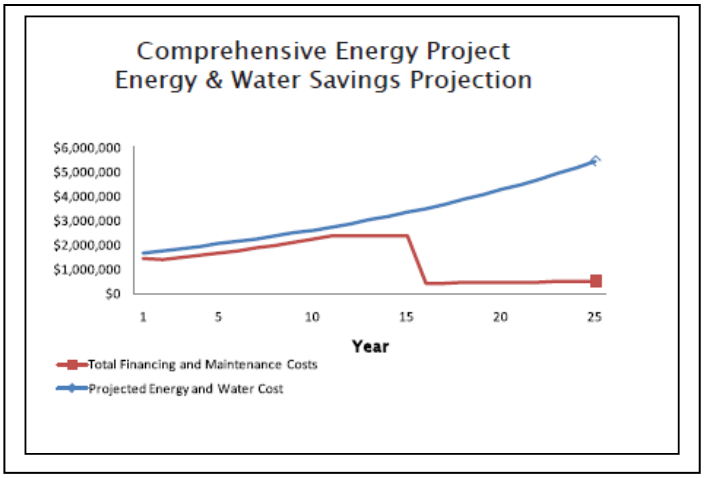
- Installation of 1.4 MW Fuel Cell Cogeneration Power Plant onsite
- Lighting retrofits at 20 buildings
- HVAC replacements or rebuilds in 4 buildings
- HVAC motors and variable frequency drives
- Water efficiency retrofits at 16 buildings
- Central Mechanical Plant upgrade (4 new chillers, 2 new boilers, and 1 new cooling tower)

Implementation of all measures was completed in 2010. Measurement and verification of the projects' performance continues.

Results:

Project Cost	
Financing Plan	$22,272,029
Incentives, Grants, and Rebates	$3,941,226
Financed Amount	$18,730,803
Estimated Interest Rate*	4.98%
Repayment Term	16 years
Assumed Closing/Funding Date	1/1/2009
Assumed Annual Energy Cost Escalation*	5%
First year of positivecash flow	Year 12
Total payments	$31,794,615
Total cumulative positive cash flow after25 years	**$38,404,231**

What	Savings by Unit	Cost Savings
Water	**16,500,000 gallons**	**$247,300**
Electricity	**2,262,445 kWh**	**$319,839**
Natural Gas	**171,164 therms**	**$121,500**
Fuel Cell	**10,830,193 kWh**	**$1,118,800**
Total Savings		**$1,807,439**



Web Link:
www.sonoma-county.org/gs/energy/pdf/CEP_Fact_Sheet.pdf

Project name: Sonoma County Regional Climate Protection Authority - Better Buildings Program: Sonoma Flex Package
Sector: Energy – Building Energy Efficiency
Approximate Date: 2009 ongoing

Project Description: In 2005 the ten local governments within Sonoma County set a mutual greenhouse gas target (25 percent below 1990 levels by 2015). The Regional Climate Protection Authority (RCPA) was created by the Legislature in 2009 to improve coordination on climate change issues and establish a clearinghouse for efforts to reduce GHG emissions. The RCPA is made up of representatives from each of the nine cities in Sonoma County and the Board of Supervisors. One of the key programs RCPA implements to reduce GHGs across the County is the Better Buildings Program, to work with homeowners, the business community, contractors, non-profits, and local governments to create the best approach toward achieving widespread energy retrofits. An essential element of the program will be creating local jobs by training contractors and others to provide retrofit services, from simple weatherization to “whole-house” retrofits.

The Better Buildings Program will:

- Create 16,300 local jobs
- Reduce GHG emissions by 168,000 tons CO2e
- Add an estimated $1.5 billion dollars to the Sonoma County economy

Through the Better Buildings Program, RCPA developed and implemented the Sonoma Flex Package, a retrofit incentive pilot program.

The Sonoma Flex Package was a retrofit incentive through which a homeowner could choose two or more measures from a menu to receive an incentive rebate of between $1,500 and $2,500 based on pre-determined energy savings. Flex Package was based on the Flex Path model innovated by the County of Los Angeles and was designed to:

- Test an alternative to the existing Energy Upgrade California Basic Path Rebate Program;
- Provide homeowners with limited budgets a home improvement pathway to Energy Upgrade participation;
- Offer contractors a streamlined job development and sales process; and,
- Deliver a minimum of 15 percent energy savings on average.

Results achieved: The Flex Pilot came to a close with the launch of the new Home Upgrade incentive. In roughly 10 months of availability, the Flex Pilot achieved the following:

- 24 complete projects
- $52,400 total rebates paid to local homeowners
- Estimated average project energy savings: 22.5% (of combined electricity and natural gas)

Project name: Sonoma County Regional Climate Protection Authority - Better Buildings Program: PAYS
Sector: Energy – Building Energy Efficiency
Approximate Date: 2009 ongoing

Project Description: In 2005 the ten local governments within Sonoma County set a mutual greenhouse gas target (25 percent below 1990 levels by 2015). The Regional Climate Protection Authority (RCPA) was created by the Legislature in 2009 to improve coordination on climate change issues and establish a clearinghouse for efforts to reduce GHG emissions. The RCPA is made up of representatives from each of the nine cities in Sonoma County and the Board of Supervisors. One of the key programs RCPA implements to reduce GHGs across the County is the Better Buildings Program, through which RCPA and the Town of Windsor piloted a Pay-As-You-Save (PAYS) program.

The RCPA worked with the Town of Windsor to design and implement a tariffed On-Water-Bill Repayment (OBR) pilot called Windsor Efficiency PAYS® (Pay As You Save). The OWB pilot set out to:

- Remove barriers to energy and water efficiency upgrades by creating a financing mechanism that is assigned to the meter location rather than the customer and a package of consumer assurances to eliminate all perceived risks associated with buying measures;
- Provide financing for energy and water upgrades that results in immediate positive cash flow on the customer's utility bill; and,
- Compliment local programs by financing upgrades that are not eligible for local property tax clean energy (PACE) financing offered through the Sonoma County Energy Independence Program (SCEIP). See example 6.

Results achieved: To date, PAYS has served approximately 5% of all residential units in Windsor, and achieved average savings of: (1) 10% of energy use; (2) 20% of indoor water use; and, (3) $15 per month in net utility costs. Based on initial program successes, the RCPA was authorized to expand the pilot through the Bay Area Regional Energy Network (BayREN). The BayREN PAYS Pilot continues to work with Windsor, as well as with the City of Hayward, the San Francisco Public Utilities Commission, and the East Bay Municipal District to explore how On-Water Bill Repayment can drive substantial resource savings.

Project name: GHG Reduction Protocol
Sector: Energy – Building Energy Efficiency
Approximate Date:

Project Description: The SCAQMD has a program to identify older boilers and process heaters that are not as energy efficient as newer models. Boilers and process heaters have a very long working life, and there are thousands currently in service in the South Coast Air Basin. This program focuses on making energy improvements or replacement of units at publicly owned facilities, such as educational facilities, government buildings and municipalities. This program is funded by a grant from US EPA to cover the cost of efficiency upgrades, or the cost of boiler/process heater replacement after the cost of the current rebate incentive is included with a focus on two environmental justice communities of Boyle Heights and San Bernardino. These efforts focus on achieving efficiency upgrades in the most cost effective manner. In order to quantify the benefits of this program, a protocol was developed by SCAQMD staff. Boiler efficiency protocol establishes a method to quantify reductions in GHG emissions and co-benefits resulting from an improvement in the efficiency of boilers and process heaters. Options to improve efficiency for existing boilers include an economizer or oxygen (O2) trim system. Co-benefit reductions (i.e., NOx, PM) would not generate credits, but could be used for CEQA mitigation. Boilers and process heaters under this protocol include those units used in medical facilities, educational institutions, office buildings, hotels, and industrial facilities.

Results achieved: Retrofits of two 40MMBtu/hr boilers are currently underway, and SCAQMD staff is actively seeking additional qualified candidates for retrofit or replacement of boilers or process heaters.

Project name: Regional Energy Efficiency Strategy
Sector: Energy – Building Energy Efficiency
Approximate Date: Since 2010

Project Description: The San Joaquin Valley APCD adopted its Regional Energy Efficiency Strategy that has established strong partnerships with energy agencies, municipalities, utilities, and other stakeholders around the Central Valley in order to inform and educate residents, businesses, and communities as to energy efficiency opportunities.

Results achieved:
As a part of these partnerships the San Joaquin Valley APCD administered the Energy Efficiency and Conservation Block Grant with 36 participating cities and counties reducing electricity consumption by 4.7 million kwh per year.

Energy

Alternative Energy

Project name: Monterey Bay Community Power
Sector: Energy - alternative
Approximate Date: Ongoing

Project Description: The Monterey Air District's APCO is the Vice Chair of the Board for the Monterey Bay Community Power Project, Project Development Advisory Committee. The project is investigating the option of community choice aggregation for the Monterey Bay region. The next step in the project is raising funds to conduct a technical feasibility study.

Project name: Community Environmental Council's Solarize Initiative
Sector: Energy - Alternative
Approximate Date: 2011 and 2012

Project Description: The Community Environmental Council (CEC)'s Solarize program leverages group purchasing and discounted pricing to help local homeowners install solar electric systems. CEC, at times working in partnership with other organizations, has implemented Solarize programs in a number of Central Coast regions including Santa Barbara, Ojai Valley, San Luis Obispo, and Santa Ynez Valley. To implement the program, CEC evaluates and selects experienced solar installation companies, and negotiates a limited time, discounted price that is then offered to local residents who utilize the program.

Web link:
http://www.cecsb.org/solarize-santa-barbara

Results achieved: CEC's Solarize programs have helped over 100 homeowners in the Central Coast region switch to solar powered homes. Case studies can be viewed on the CEC website.

Project name: UCSB/Santa Barbara County Multi-Jurisdictional Renewable Energy Task Force
Sector: Energy – Alternative
Approximate Date: January 2013 to present

Project Description: The Multi-jurisdictional Renewable Energy Taskforce emerged out of the 2nd Annual Central Coast Sustainability Summit, hosted by UCSB in October 2012, as a way for representatives from different agencies throughout the region to come together and work on renewable energy projects that would benefit Santa Barbara County. With the coordination of multi-jurisdictional partners, the taskforce has the ability to leverage a vast amount of knowledge and help renewable energy projects gain momentum and acceptance. A number of projects were brainstormed during the 2nd annual summit, and the taskforce provides a vehicle for representatives to continue meeting and further exploring the project ideas during the time in between summits.

Web link:
http://www.sustainability.ucsb.edu/multi-jurisdictional-renewable-energy-taskforce/

Results achieved: The taskforce has had three meetings so far, with a total of 19 different institutions from Santa Barbara County represented, including six cities, UCSB, the County Association of Governments, the Metropolitan Transit District, the Air Pollution Control District, Santa Barbara Unified School District, Community Environmental Council, Santa Ynez Band of Chumash Indians, and several other interested groups. Together, the taskforce members have chosen to focus on community choice aggregation (CCA) and joint renewable energy projects as potential initiatives on which they can collaborate for the benefit of Santa Barbara County.
Project name: Sonoma Clean Power – Community Choice Aggregation
Sector: Energy – Alternative Energy
Approximate Date: 2013 ongoing

Project Description: Sonoma Clean Power (SCP) is a new, locally controlled electricity provider in Sonoma County. It is a non-profit agency, independently run by the Sonoma County cities that have joined the program, including Sonoma, Santa Rosa, Cotati, Windsor and Sebastopol, and the County of Sonoma, which represents unincorporated communities. SCP provides residential and business customers across Sonoma County the option of using environmentally friendly power, generated by renewable sources, like solar, wind and geothermal, at competitive rates. Based on proposals for 2014 from potential energy providers, SCP electricity rates are expected to be:

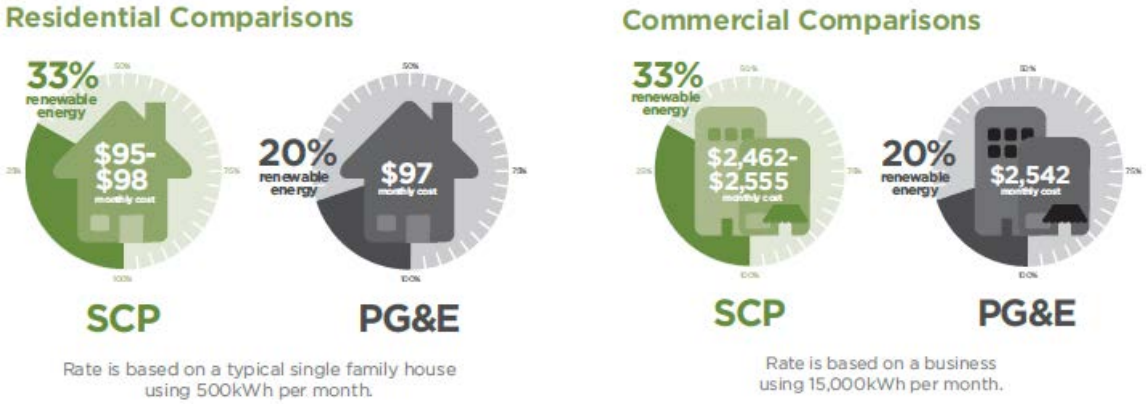
- Residential Rates: Estimated between 1.8% below and 1.1% above PG&E's rates.

- Commercial Rates: Estimated between 3.1% below and 0.5% above PG&E's rates.

Actual rates will be available at least 60 days before service begins for the first group of customers. Service for the first of three phases begins in 2014. Later phases will be added in 2015.

SCP will supply greener power to homes and businesses. PG&E will continue to do all of the billing, deliver electricity and maintain the existing power lines. But SCP will receive 33% renewable energy in early program years, 50% renewable power in just a few years**.** SCP will also offer 100% renewable power for a small premium (likely to be about $10-$15 a month for a typical single-family house).

SCP will reduce the amount of greenhouse gas emissions associated with electricity use in Sonoma County by a minimum of 3.1 million tons over 20 years, the equivalent of planting 80,000,000 trees. In addition, SCP will reinvest its money in Sonoma County to develop local renewable power sources and support local jobs.



Web link:
www.sonomacleanpower.org

Project name: Sonoma County Energy Independence Program – Property Assessed Clean Energy Financing
Sector: Energy – Alternative Energy
Approximate Date: 2009 ongoing

Project Description: The Sonoma County Energy Independence Program (SCEIP) was initially formed when state legislation allowed local government to use local funds to provide up-front funding to eligible property owners to finance the installation of energy efficiency and water conservation improvements and renewable energy systems on their property. That program function continues as one of the many programs offered under the SCEIP umbrella; the original program is now known as the Property Assessed Clean Energy Financing (PACE) program under SCEIP.

Property Assessed Clean Energy Financing (PACE) is a financing option that authorizes a local government to provide up-front funding to eligible property owners to finance the installation of energy efficiency and water conservation improvements and renewable energy systems on their property. This funding is paid back to the County, with interest, over time on the owner's property tax bill. The financing is 100% voluntary. On March 24, 2009, the Board approved its participation in PACE financing, thereby launching the SCEIP. This Program established the first countywide PACE financing option in the State of California and continues to provide both residential and non-residential PACE financing.

Results achieved:

PACE Funding Summary since 2009		
	# of Applications	Funding
Applications Received	2,746	$99.5 million
Applications Approved	2,118	$69.8 million
Projects Funded	1,963	$64.0 million
Projects with funding pending	37	$1.1 million

PACE Project Summary since 2009	
Improvement projects completed by local contractors	2,526
Percent completed by local contractors	80 %
Jobs retained/created	511 local, 778 using the ARRA* formula
Solar installations completed	1,233
Annual Generation capacity of projects	8.9 MW

PACE GHG Reductions since 2009			
Residential solar PV	1156 systems	6.6MW	5751 CO2 e Tons/yr
Non-residential solar PV	46 systems	2.2MW	1896 CO2 e Tons/yr

Future Challenges and Alternatives: The SCEIP PACE program has two main challenges going forward: the position of the Federal Housing Finance Agency (FHFA) on PACE programs; and ongoing funding needs.

FHFA Position - The FHFA continues to hold that properties with energy assessments cannot participate in federal financing programs (Fannie Mae and Freddie Mac); the Ninth Circuit Court of Appeals dismissed the County's case, ruling that the Courts have no jurisdiction. This continues to prevent some property owners from participating in PACE. Action by Congress could address the problem.

Financing - The Sonoma County Treasury and the Sonoma County Water Agency together have authorized a maximum of $60 Million to be invested in SCEIP contractual assessment revenue bonds. Although early pay offs of some assessments coupled

with measured program growth allows for continued funding of new program participants, it is anticipated that interest and efforts to increase program participation will eventually lead to the $60M threshold being approached. Currently, $13 Million of this originally authorized $60 Million remains available for project funding. Possible options to address funding needs for this PACE program and programs in other jurisdictions include:

- Financing Marketplace: One area of opportunity being examined is collaboration and partnership with private PACE program providers. The PACE program initiative and funding landscape continues to expand driven by growing number of programs being implemented through private-public partnerships throughout the State. Such programs continue to evolve and they have one key common component - maximize the number of options provided to property owners to secure funding while utilizing underwriting criteria that safeguard the public entity's participation.
- PACE Bond Sale: The County Treasurer currently holds PACE bonds and is exploring the the release of a Request for Proposal (RFP) to determine whether there might be buyers for a portion of these bonds. As it relates to PACE, the financing market has seen a growing interest in investment portfolios linked to the provision of funds for energy conservation and renewable energy projects. This is contrary to the state of the market as recently as 12 months. This turn around in interest is driven by multiple factors with three key components being: 1) Pent up investment capital; 2) Recognition of the fiscal viability of such investments as construed under P.A.C.E type structures; and 3) The positive perception and value of investing in environmental sustainability efforts. Bonds sales may provide working capital for the program in the future.
- Forward Capacity Markets for Demand Reduction: Modest changes in the rules governing California's energy markets could allow public entities operating PACE programs to "bid" reductions in energy demand in the market place on the same basis that power producers bid energy production to meet forecast demand. The PACE program would be paid to deliver the promised demand reductions. The State of Vermont operates a such a market through the Independent System Operator (ISO) for New England, with the approval of the Federal Energy Regulatory Commission (FERC). Changes of this nature could be initiated by the California ISO, or by the Legislature, and would have to be approved by the FERC.

Information available at www.sonomacountyenergy.org

Project name: Sonoma County Regional Climate Protection Authority - RESCO
Sector: Energy – Alternative Energy and Building Energy Efficiency
Approximate Date: 2009 - 2012

Project Description: Sonoma County RCPA participated in a Renewable Energy Secure Communities (RESCO) project funded by the California Energy Commission. This collaborative project with the Sonoma County Water Agency, the Climate

Protection Campaign, and Los Alamos National Laboratory, created data analysis tools to show renewable energy potential and identify future projects.

Project elements:

- Design a renewable energy portfolio for the County that identifies opportunities for distributed generation and demand reduction
- Develop a system dynamics model of energy use and CO2 emissions across several County sectors
- Design and building a pilot project to showcase several renewable energy technologies to offset local demand
- Design County governance structures and financing instruments to implement the plan.

Project Outcomes**:**

- Suite of candidate projects that produces the lowest cost green energy for the County
- Proposal for a governance and financing structure to implement the system as a major public works project
- Computer model that describes greenhouse gas (GHG) impacts, costs, and jobs created
- Pilot project demonstrating RESCO principles: integrated, distributed, community-scale.

Results achieved: Research conducted through RESCO helped to inform the creation of Sonoma Clean Power, the third Community Choice Aggregation Program in the State (see item #5).

Project name: Energy Policy
Sector: Energy
Approximate Date: 2011

Project Description: The SCAQMD Air Quality Related Energy Policy was adopted by the SCAQMD Governing Board in September 2011 and integrates air quality, energy issues, and climate change in a coordinated and holistic manner. The Policy provides a list of actions needed to facilitate the implementation of zero and near-zero emission technologies.

Transportation

Alternative Fuel & Electric Vehicles

Project name: Bay Area Plug-in Electric Vehicle Ready Program
Sector: Transportation – vehicle projects
Approximate Date: 2011

Project Description: The Bay Area Air Quality Management District (Air District) developed the plug-in electric vehicle (PEV) program to support early PEV efforts and to provide incentives to the local consumer. This program began in 2011, continuing through 2012, with the Air District awarding over $3 million to incentivize the deployment of PEVs. Additionally, the Air District was awarded $800,000 in combined funding from the Department of Energy (DOE) and California Energy Commissions (CEC) to develop regional PEV Readiness Plans for the Bay Area and Monterey regions.

In June 2013, the Air District allocated an additional $6.25 million to support the deployment of electrical vehicles and electric vehicle charging infrastructure. Of that amount, $3.75 million is dedicated for incentive funding for Bay Area residential, business, and public agency fleets, and another $2.5 million towards funding PEV infrastructure at multi- dwelling units, workplaces, and public places. From the funds available for PEV infrastructure, $1 million was allocated for the DC Quick Charger Program to support the expansion of the Bay Area's publicly available network of chargers.

Results achieved: Hybrid and plug-in electric vehicles use electricity as their primary fuel or to improve the efficiency of conventional vehicle designs. This new generation of vehicles, often called electric drive vehicles, can be divided into three categories: hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), and battery electric vehicles (BEVs). The Air District's PEV Program is expected to provide:

- Incentives for the installation of up to 2,750 Bay Area home chargers
- Incentives for the installation of 180 publicly available chargers
- Building public/private relationships with the local business community
- Enabling data collection to evaluate program effectiveness and inform future efforts
- Best practices for cities and counties with regard to building codes, permitting and inspection zoning parking and ordinances
- PEV Readiness implementation actions over the next 10 years for utilities, and local and regional governments

Project name: Plug-In Electric Vehicle Readiness Planning
Sector: Transp. – Vehicle projects (eg: alt./electric)
Approximate Date:

Project Description: The Monterey Air District is working with the Bay Area Air Quality Management District to implement a Monterey Bay regional plug-in electric vehicle (PEV) strategic plan for electric vehicle supply equipment (EVSE), establish best practices for "PEV-ready" building and public works guidelines, and to help streamline the EVSE permitting, installation, and inspection processes. The project is part of a larger project funded by the California Energy Commission.

As part of PEV readiness planning, the District participates in the Monterey Bay Plug-In Electric Vehicle Coordinating Council (PEVCC) and the Monterey Bay EV Alliance (MBEVA).

The District has also provided grant funds, through the AB2766 program, for the installation of charging stations and purchase of PEVs.

Results achieved: The following are the projects funded by the Air District with AB 2766 funds:

- 11 grant funded EV charge stations installed and operational in the region (8 more in the works)
- 1 grant funded EV

4 EV's added to the commercial rental fleet (Santa Cruz County) via grant funded PE

Project Name: EV Community Readiness Plan for the Central Coast Region of California
Sector: Transportation - Vehicle Projects
Approximate Date: 2012-2013

Project Description: SLO County APCD is working with Santa Barbara and Ventura County Air Districts, and the Community Environmental Council to develop an *EV Community Readiness Plan for the Central Coast of California*. This plan development is part of a statewide effort to streamline the permitting and installation process for electric vehicle infrastructure with the overall goal to facilitate and encourage mass adoption of Plug-in Electric Vehicles (PEVs) in the State of California. The plan recommends the adoption of policies, programs, and resources to develop "PEV-ready" infrastructure and "PEV-friendly policies" throughout the Central Coast region and assist the local jurisdictions in achieving their EV readiness goals. The Plan is targeted for completion in the 4th Quarter of 2013.

Results achieved: The Central Coast Region (Santa Barbara, Ventura, and San Luis Obispo Counties) was successful in securing $250,000 from the U.S. Department of Energy and the California Energy Commission to assist with development of the *EV Community Readiness Plan*. The Plan is targeted for completion by the end of the year.

Project Name: Alternative Fuel Community Readiness Planning for the Central Coast Region
Sector: Transportation - Vehicle Projects
Approximate Date: 2012-2013

Project Description: SLO County APCD is working with Air Districts and Clean City Coalitions statewide to adopt best practices and streamlining mechanisms to promote the use of lower carbon alternative fuels. The goal of this project is to advance alternative fuel markets by eliminating barriers to the deployment of alternative fuel vehicles and infrastructure at California workplaces and in California fleets. Nearly

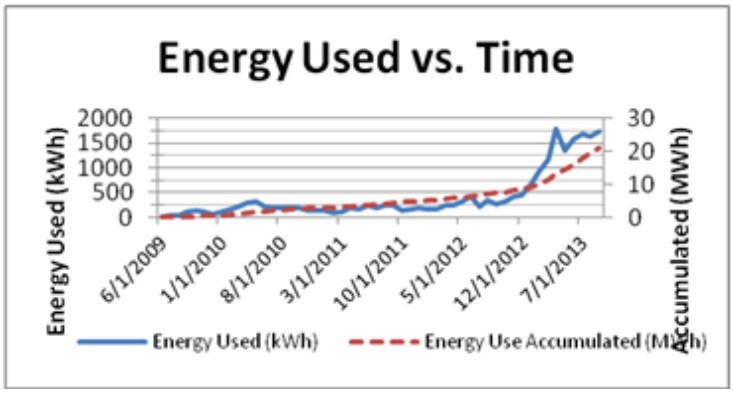
ninety six percent (96%) of all transportation energy that Californians consume comes from petroleum-based fuels and the state's transportation sector accounts for nearly forty percent (40%) of the state's greenhouse emissions.

Results achieved: The Central Coast Region successfully secured $35,000 to assist in the development of best practices as part of this statewide project.

Project name: Electric Vehicle Initiative – Infrastructure Project
Sector: Transportation – Vehicles (Charging Infrastructure)
Approximate Date: 2009 - 2013

Project Description: A coalition including the Northern Sonoma Air District, the Sonoma County Water Agency, the County of Sonoma, its nine cities, the Agriculture and Open Space District, and the Sonoma County Transportation Authority committed to develop the infrastructure to support electric vehicles and bring 1,000 of them into the County. As part of that effort, the District provided the local match that enabled Sonoma County to secure funding for a comprehensive network of electric vehicle charging stations, and continues to provide grants to public and private entities to fill out and expand this network. There are currently 60 active charging stations on this network. When the network is complete, the Sonoma County Electric Trail will include 116 charging stations, with stations in all of the County's cities as well as many other locations throughout the wine country and along the coast. It will provide access to charging that ensures a driver can take an electric vehicle anywhere in Sonoma County - and back again.

Results achieved: Over 20 MWh of cumulative charging at active stations, saving over 20 MT CO2e.



In addition to funding electric vehicle charging infrastructure, the District provides grants for alternative fueled, hybrid, and electric vehicles. In the last two funding cycles, funds have been provided for hybrid light duty vehicles, and diesel-hybrid medium and heavy duty vehicles.

Project name: Electric Vehicle Charging Infrastructure
Sector: Transp.- Vehicle projects (eg: alt./electric)
Approximate Date: 2011 to present

Project Description: The Santa Barbara County Air Pollution Control District (District) partnered with local agencies, businesses, and nonprofit organizations to raise awareness of the need for electric vehicle infrastructure, participating in outreach events and training workshops to educate the community about the technology and funding/incentive programs available.

Beginning in May 2011 the District developed an EV charging infrastructure program that provided funding for public entities to assist in the purchase and/or installation costs for Level II (quick-charge) or higher charging stations.

Under a grant from the California Energy Commission, the District partnered with neighboring districts San Luis Obispo County APCD and Ventura County APCD, and nongovernmental organizations to prepare an Electric Vehicle Infrastructure Readiness Plan for the California Central Coast region.

Web links:
http://www.sbcapcd.org/edu/clean-air-cars.htm
http://www.cecsb.org/pluginsb
http://www.c-5.org/

Results achieved: EV infrastructure grant agreements have been issued for EV charging stations in the City of Santa Barbara, at the University of California Santa Barbara, in the City of Buellton, and at Peabody Charter School in Santa Barbara. Other cities have expressed interest and the District currently has funds for additional EV infrastructure grants.

The EV Infrastructure Readiness Plan for the Central Coast region is currently in the final phase of development.

Project name: Sonoma County Green Fleet Program
Sector: Transportation – Vehicles (alt./elect)
Approximate Date: 2006 ongoing

Project Description: When the Sonoma County Board of Directors approved aggressive GHG reduction targets in 2006 (25% below 1990 levels by 2015), the Board directed County staff to reduce emissions from the County's On-Road fleet by 20% by 2010. In 2006 the fleet included 53 Hybrid Electric Vehicles. Starting in 2009, the County converted a Toyota Prius to a Plug-In Hybrid Electric Vehicle and subsequently converted eight more, and incorporated medium and heavy duty truck HEV's and PHEV's to the fleet. In 2011 the County purchased one of the first production models of the Nissan Leaf, and in 2012 Extended Range Electric Vehicles (EREV's) and factory PHEV's were added. The County currently has 264 hybrid electric and all electric vehicles, which comprise 29% of the entire Light Equipment fleet. A majority of the funds used to purchase electric hybrid and all electric vehicles have been supplied through the Vehicle Replacement Program that Fleet established and manages for County departments and external customers. The program is funded through a rate structure that charges customers a monthly fee for the future replacement of their vehicles. The differential cost between a conventionally powered vehicle and a hybrid electric or all electric vehicle was either supplied by grant funding or through the fiscal management of the Vehicle Replacement Program fund itself.

Results achieved: The Green Fleet Program has achieved a reduction of 2,925 tons of GHG, which is more than the 20% GHG reduction target. During the same period, overall fleet VMTs increased by over 10,000,000 miles as compared to the previous 10 year baseline. Currently the average fleet miles per gallon for the electric hybrid subsection of the fleet is 47.5 mpg as compared to 20.4 mpg for compared

The Sonoma County Fleet was recently recognized as number 14 in 100 Best Fleets in North America competition sponsored by Government Fleet Magazine, INVERS, and Property Room out of approximately 38,000 government fleets in North America. Though the recognition is based on the application and use of many public fleet best practices, the County's effort to pragmatically and holistically assimilate environmentally less impacting components into the public fleet was a critical element in the recognition process.

conventionally powered vehicles that they are replacing, which represents an average improvement of 27.1 mpg. The program has also saved over 137,000 gallons of gasoline. The fleet has driven over 8,677,000 miles in HEVs, PHEVs, Neighborhood Electric Vehicles (NEVs), and BEVs since 2002. Total life cycle costs for the County's first hybrid electric vehicles were less than the life cycles costs for the conventionally powered vehicles they supplanted (other same-time purchases) by $1,100 per vehicle.

Project name: Research, Development and Demonstration and Technology Deployment: Advanced Transportation Systems
Sector: Transportation – Alternative Fuel and Electric Vehicles
Approximate Date: 2012 and ongoing

Project Description: The SCAQMD has conducted numerous demonstration programs relevant to GHG emission reductions. In addition to programs demonstrating NOx and PM emission reductions from control of diesel-powered vehicles, SCAQMD has also conducted projects demonstrating zero-emission vehicles. The goods movement-related projects described below will all be conducted using Class 8 heavy-duty trucks. Examples of projects include:

(a) Demonstration of battery and neighborhood electric vehicles, which is co-funded by the South Bay Cities Council of Government (SBCCOG) and is a continuation of an existing project to demonstrate longer range battery electric vehicles.
(b) Siemens Mobility and Volvo Truck Catenary Truck Project, which involves infrastructure (catenary wires) being constructed along Alameda Street in the city of Carson for an approximate one mile segment. Two types of trucks are proposed to run on this system, including a battery electric truck, and a converted CNG-hybrid truck.
(c) DOE Zero Emission Container Transport Demonstration Project which involves four types of zero-emission drayage truck technologies installed in a total of 13 trucks during the first year of the project. This will be followed by two years of field demonstration in real world drayage operations with fleet partners.
(d) Volvo Plug-in Electric Vehicle Project which will employ a plug-in hybrid drive system, with the ability for fully zero-emission electric mode enabled for limited distances at low speeds. This plug-in hybrid powertrain will utilize a downsized diesel engine and is expected to improve fuel economy by approximately 30%.
(e) EVI/UPS Electric Vehicle Project. The EVI/UPS electric vehicle project uses 40 Class 6 medium duty trucks, specifically at UPS's San Bernardino facility.

Results achieved: The zero-emission vehicle projects will quantify the range, recharge time and energy efficiency for each utilization of zero-emission vehicles. These projects are ongoing and no results have been quantified yet. Prior work on the battery and neighborhood electric vehicle demonstration project has already shown that electric vehicles were used for an average of 26% of total commuter trips among the study

participants, and provided a 23% to 33% emission reduction. The EVI/UPS electric vehicle project has been completed, with delivery of all 40 trucks to UPS by June 2013.

Project name: Electric Vehicle Infrastructure
Sector: Transportation – Vehicle Infrastructure
Approximate Date: 2011 to present

Project Description: SCAQMD is involved in several plug-in electric vehicle (PEV) planning and deployment efforts. SCAQMD was the lead agency for the DOE funded California PEV Readiness Project which created six regional plans and a PEV readiness toolkit for best practices in PEV infrastructure planning. SCAQMD is in involved in several vehicle charging deployment efforts including the CEC funded SoCalEV Ready Program (installing 315 Level 2 chargers), CEC funded DC fast charging network (installing 20 DC fast chargers in Los Angeles and Orange Counties and incentives for 210 Level 2 chargers in the South Coast Air Basin). In addition to these, there is one DC fast charger and 20 Level 2 public chargers installed at SCAQMD headquarters. Additionally, SCAQMD is continuing its electric vehicle readiness efforts through the DOE funded California Fleets and Workplace Alternative Fuel Readiness Project, a statewide coalition led by BAAQMD.

Results achieved: Over 500 Level 2 chargers and 20 DC fast chargers installed.

Project name: Hydrogen Fuel Infrastructure
Sector: Transportation – Alternative Fuel and Electric Vehicles
Approximate Date:

Project Description: The SCAQMD has partnered with other companies and agencies to develop and install hydrogen technologies and infrastructure. Examples of these include: (a) developing hydrogen storage capability for a gas bending facility at the University of California, Irvine; (b) partnering with Hydrogenics Corporation to install a hydrogen generation and fueling station at SCAQMD Headquarters - this system uses electrolysis of water to produce hydrogen and includes the capability to produce backup electrical power using a hydrogen-powered internal combustion engine; (c) Partnering with UCLA to demonstrate a new hydrogen refueling station open 24 hours a day 7 days a week which will be accessible to the public; (d) partnering with Linde, LLC to expand the hydrogen fueling station infrastructure. Under this project, Linde will demonstrate that hydrogen fueling can be integrated with retail gasoline fueling and provide public hydrogen fueling to promote its viability in the marketplace. The station will be located in a heavily traveled area close to main corridors and adjacent to key residential areas (TBD).

Results achieved: The hydrogen fueling stations the SCAQMD is helping develop will provide the infrastructure needed to help implement greater usage of fuel cell vehicles.

Project name: Clean vehicle infrastructure/awareness
Sector: Transp. – Vehicle projects (e.g. alt/electric)

Approximate Date: Since 2012

Project Description: The San Joaquin Valley APCD received two grants, from the California Energy Commission and the Department of Energy, to increase zero-emission and clean vehicle awareness and deployment and looks to add much needed charging stations throughout the Central Valley region.

Transportation

Trip Reduction

Project name: BAAQMD Regional Bicycle Share Pilot Project
Sector: Transportation – Trip Reduction
Approximate Date: 2013

Project Description: Bay Area Bike Share Program is one of the first public bike share services offered in California and the first bike share program to launch as a regional, multi-city service in the country. Designed as a pilot program, bicycles are available at stations for use in San Francisco, Redwood City, Palo Alto, Mountain View, and San Jose. The Air District is the lead administrator and the program is being conducted in partnership with the City and County of San Francisco, the San Mateo County Transit District, the City of Redwood City, the County of San Mateo, and the Santa Clara Valley Transportation Authority. The program is membership-based for short-term bicycle rental. Members can check out a bicycle from a network of automated stations, ride to another station nearest their destination, and leave the bicycle safely locked for someone else to use. Prices are $88 per year for a full-time member or $22 for a three day pass and $9 per day for the casual rider. Stations are located near transit hubs, high-density residential areas and key destination points such as shopping or employment centers. The pilot period is anticipated to run for 12 to 24 months and the results will be used to assess opportunities for expanding the program into other Bay Area communities.

Results achieved: A main goal of the pilot program is to evaluate bike sharing's potential to reduce vehicle trips and improve local air quality. Bike sharing offers a clean and healthy alternative to single-occupancy vehicles, by providing a means for completing the first- and last-mile of trips in conjunction with regional transit, as well as stand-alone short distance trips.

Program Highlights Include:

- Approximately $11 million in public funds have been secured to implement the pilot system
- Planned expansion to 1,000 bicycles at 100 stations by 2014
- Enabling public access to bicycles 24 hours a day, 7 days a week
- Estimated regional demand to support fleet size up to 10,000 bicycles

Project name: Santa Barbara Car Free
Sector: Transportation/Miscellaneous
Approximate Date: 1998 to present

Project Description: The Santa Barbara Car Free project, founded and led since 1998 by the Santa Barbara County Air Pollution Control District is a collaborative effort to reduce air pollution and greenhouse gas emissions from tourists' cars. Amtrak®, the City of Santa Barbara, the Santa Barbara Region Chamber of Commerce, and Visit Santa Barbara, and more than 100 businesses, agencies, transportation providers, organizations, and local tourism businesses participate. The Project's 2013 "Cool Car Free Discounts" promotion features discounts from more than 66 hotels and activities, and a 20% discount on the Amtrak Pacific Surfliner®.

Web link:
http://www.santabarbaracarfree.org/

Results achieved: Thousands of visitors use the Santa Barbara Car free discounts every year to arrive in Santa Barbara by train, and/or to get around without a car once they arrive. The Project has received numerous awards, including a 2009 national Clean Air Excellence Award from the U.S. Environmental Protection Agency and the Clean Air Act Advisory Committee. Over the years, the Project has inspired similar efforts in other areas.

Project name: Sonoma County Transportation Authority & Sonoma County Climate Protection Campaign - WeGo Sonoma
Sector: Transportation – Building Energy Efficiency
Approximate Date: 2013 ongoing

Project Description: WeGo Sonoma is a real-time rideshare pilot program rolling out across Sonoma County. Using web and mobile technology, WeGo Sonoma provides a convenient and affordable way to share rides through a social network that connects riders and drivers in real-time and in advance.

The pilot aims to:

- Increase the number of shared commute trips while reducing the parking demand;
- Reduce greenhouse gas emissions; and
- Build a critical mass of users to continue ridesharing once local outreach wraps up.

The Sonoma County Transportation Authority is implementing the pilot in partnership with the Santa Rosa-based non-profit Climate Protection Campaign and their software provider, Carma.

A mobile phone is required to use the software. Those with smartphones can use the app either as riders or drivers. Those with basic mobile phones can use the software

only as riders. The software tracks shared trips and electronically transfers a micropayment from rider to driver to offset the cost of driving. To facilitate rideshare community-building, it also features a user rating system.

Additionally, those who live, work or learn (age 18+) in Sonoma County and participate in WeGo Sonoma are eligible for the WeGo MORE rewards and referral programs, with opportunities to earn fun rewards for sharing rides.

The Carma smartphone app for WeGo Sonoma is free to download. All new users receive $5 in credit to try the system as riders. Riders are charged $1 for the first mile of the shared trip then $0.20 per mile for the next 15 miles. Thereafter, the cost drops to $0.08 per mile. These micropayments from the rider to driver are transferred electronically. The driver also has the option of providing the rider a free ride in the app.

www.wegorideshare.com/**sonoma**

Project name: Employer Based Trip Reduction (eTRIP)
Sector: Transp. – Commute Trip Reduction
Approximate Date: Since 2009

Project Description: In 2009, the San Joaquin Valley APCD adopted a first-of-its-kind Rule (Rule 9410, Employer Based Trip Reduction), which requires larger employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing criteria and GHG pollutant emissions associated with work commutes. The District has also offered a variety of incentive programs aimed at reducing trips, including its REMOVE program.

Water

Project name: Sonoma County Water Agency – Carbon Free Water by 2015
Sector: Water **(**Energy – Alternative Energy)
Approximate Date: 2006 ongoing

Project Description: Being the largest energy user in Sonoma County, in 2006, the Water Agency committed to the goal of operating a carbon free water system by 2015. To achieve this goal, the Water Agency is actively working to diversify its energy portfolio and reduce its energy and fuel needs through efficiency and renewable energy production. Through this effort, the Water Agency is helping to pioneer new technologies that have been carefully evaluated for economic viability. Efforts include energy and sustainability projects, programmatic efforts, and creative partnerships.

Some examples of the energy and sustainability projects currently under way include:

- Installation of a wind turbine at the wastewater treatment plant in Geyserville in January of 2013. The turbine will generate 5 kw at full capacity, cost $29,500, and supply 7% of the annual power consumption for that service zone.

- Energy efficiency improvements at the Water Agency's administration building, including: window film application, lighting retrofits, and LED installation. The window film saves energy by reducing the amount of heat transferred through the glass. This means that less energy is used to regulate the internal climate of the facility, because there is less of an external influence. The film application has a lifetime of 15 years and saves the Agency approximately 30,000 kWh annually. Almost half of the lighting retrofits were paid for through the Association of Bay Area Governments. The savings were achieved by pairing higher quality tubes with more efficient ballasts and eliminating unnecessary lights (aka delamping) in areas of low usage. More than 600 fixtures were retrofitted and provides the Agency approximately 62,000 kWh in annual savings. Each of the 16 LED tubes used to replace fluorescent tubes have lifetime of 50,000 hours, which last twice as long as the best fluorescent tubes in the market today. The Agency saves approximately 300 kWh annually, assuming 40 hours of weekly operation for 52 weeks.
- Installation of three photovoltaic systems that when combined generate 2 MW of solar electricity. The administration building has a 0.5 MW system that has panels flush on the roof and panels on a carport-like structure in the parking lot. The Airport Larkfield Wastewater Treatment Plant has a 0.5 MW fixed system that is ground mounted around the edge of one of the storage ponds. The Sonoma Valley Wastewater Treatment Plant has a 1.0 MW tracking system that is ground mounted in a field adjacent to a storage pond. The Agency continues to investigate additional opportunities for solar power generation.
- Evaluation and development of Community Choice Aggregation for local electricity. On March 22, 2011, the Sonoma County Water Agency Board of Directors directed the Water Agency to investigate Community Choice Aggregation (CCA) while concurrently approving the Water Agency's Energy Policy. Community Choice Aggregation allows one or more cities and/or counties to form a service area that provides for the purchase of power generation of customers within that service area. Water Agency staff undertook a comprehensive analysis of costs, benefits, and potential disbenefits. Based on the results of that work, staff developed and put in place the legal and policy foundation to create Sonoma Clean Power, which is now functioning as an independent endeavor (see example #5).
- Planned installation of a Farm-to-Fuels biodigester and 1.4 MW fuel cell. The biodigester would accept chicken manure from local egg producers and convert it to biogas and a nutrient rich fertilizer. A portion of the biogas would power the fuel cell, which would provide between 25% and 33% of the Water Agency's total base power needs; the remainder would be sold. The project is expected to reduce about 4,000 tons per year of GHGs, and also reduce runoff of chicken waste into the County's waterways. It involves a $55 million in direct capital investment, and will provide 36 permanent jobs, as well as 94 temporary construction jobs.

Select examples of programmatic efforts include:

- Establishment of Applied Solutions, a group of counties and cities across the country who are working to develop replicable, integrated, and sustainable community infrastructure projects. The non-profit has its own Board of Directors, and provides webinars, technical project guidebooks, and a library of economic assessments, as well as advice to its members. It is funded through grants; there is no fee to join.
- Creation of the Sonoma County Efficiency Financing (SCEF) Program, a program to finance energy efficiency and water conservation retrofits for public and non-profit facilities. The SCEF program is a scaled down version of a Sustainable Energy Utility (SEU) model. Under SCEF, participants can complete efficiency and conservation projects such as street and building lighting; HVACs, boilers and chillers; ducting, windows, partial roofing, and toilet replacements, among others. There are not upfront capital costs; all project costs are fully paid through a savings guarantee. Financing is customized for each participant and measure, tax exempt, and below market.
- Establishment, with the County of Sonoma, of the Sonoma County Energy Independence (SCEIP) Property Assessed Conservation Easement (PACE) program (see item #6).

The Water Agency also has creative partnerships with 37 other organizations, including cities, counties, federal, state, and local agencies, tribes, non-governmental organizations, businesses, universities, international organizations, and others.

Results achieved: As documented in the Water Agency's 2012 Greenhouse Gas Inventory Report for the Carbon Registry, the Water Agency has reduced its GHG emissions by 80% from 2007, which is four times greater than the reduction required to receive TCR's Platinum Member status, which the Agency received. These reductions include a 96% reduction in GHG emissions from electricity use alone. The Water Agency fully expects to reach its Carbon Free Water goal before 2015.
www.scwa.ca.gov/**carbon**-free-**water**

Project name: Santa Barbara County Green Business Program
Sector: Water Use; Solid Waste; Energy – Building Energy Efficiency;
Approximate Date: 2008 to present

Project Description: The Santa Barbara County Green Business Program is a free, voluntary program that offers incentives and assistance to encourage businesses to implement voluntary actions to protect, preserve, and improve the environment beyond what current laws require. Businesses meeting these criteria can be certified as green businesses. The program is a collaborative effort, with approximately 30 partner agencies, utilities and organizations that provide funding and in-kind labor for program operations.

Web links:
http://www.greenbizsbc.org/
http://www.sbcapcd.org/biz/greenbizsbc.htm

Results achieved: Since 2008, the program has certified over 70 businesses at a current rate of approximately 20 businesses a year. Certified business have reduced their environmental footprint in several resource areas by making strides in solid waste reduction and recycling, environmentally preferable purchasing, energy conservation, water conservation, and pollution prevention.

Through implementation of program checklist measures, like conducting audits, tracking usage, and adopting specific measures that reduce resource consumption, businesses have made noticeable reductions in costs related to water and energy use and waste disposal, translating into savings on their utility bills. Specific examples:

- A hotel in Santa Ynez Valley (certified in 2009) reduced their water use by 10.4% resulting in a water cost savings per room of 10.2%. The hotel also reduced electricity use by 6.9%, a cost savings per room of 10%. The hotel estimates that they are saving an average of $15,000 to $20,000 a year through a reduction in energy use, waste generation with trash pickups, water usage, copy paper reduction, etc.
- A real estate investment, development and property management company achieved certification for their corporate offices in Santa Barbara. The measures they implemented resulted in water cost savings of 41%, electricity cost savings of 25%, and they increased their waste diversion rate from 33% to 71%.

Solid Waste

Project name: Renewable Fuels and Clean Vehicles
Sector: Energy – alternative; Transp. – Vehicle projects; Solid Waste
Approximate Date: 2012-ongoing

Project Description: The Sacramento Metropolitan Air Quality Management District (SMAQMD) has a strong leadership role in partnering with regional organizations to achieve significant reductions in GHGs in the transportation sector, through supporting the use of alternative fuels, improved vehicle technologies, and smart, sustainable business practices. In particular, the SMAQMD is working with local organizations to convert organic wastes into renewable natural gas, thus reducing methane emissions from landfill as well as displacing conventional natural gas with a carbon-neutral alternative.

The SMAQMD is a founding member of Sacramento Clean Cities, one of the 90+ coalitions in the federal Department of Energy's Clean Cities Program, working to reduce GHG emissions from transportation, through efforts such as encouraging walking, cycling, and transit, and promoting the use of fuel-efficient vehicles and low-carbon fuels.

Sacramento Clean Cities places a strong emphasis on reducing Vehicle Miles Traveled (VMT) and promoting the regional production and use of renewable fuels. The SMAQMD is working with regional partners to encourage local processing and

consumption of foods grown in the region, and most importantly, turning that food waste into renewable natural gas through anaerobic digestion.

Processing and consuming locally grown food reduces "food miles" – the GHG emissions from food transport. Even more valuable for emissions reduction is turning biodegradable waste from food processors and consumers into renewable natural gas (RNG). RNG is carbon-neutral, is made from renewable fuel stock (organic waste), and can be compressed and used in existing natural gas vehicles without engine modifications. RNG can also generate electricity, and thus provide fuel for electric vehicles.

The SMAQMD, through its leadership role with Clean Cities, is working closely with numerous partners in the region to build awareness of the renewable fuel opportunities from the growing volume of organic waste. The District is working to expand the number of organizations and buildings that are separating their organic wastes and diverting it to a local anaerobic digester. Renewable natural gas is available today to the growing number of Sacramento fleets with natural gas vehicles. Through workshops, newsletters, public forums, and outreach opportunities, we hope to dramatically increase the volume of renewable fuel produced and used in the region. These efforts will play a significant role in the sustainability of the Sacramento region's economy, while achieving significant reductions in greenhouse gas emissions.

Results achieved: Currently, the Sacramento region is diverting 25 tons per day of food waste to an anaerobic digester, providing approximately 500 diesel gallons equivalent of compressed natural gas for 10 refuse trucks operating daily.

Project name: Waste-to-Energy (Alternative)
Sector: Energy - Waste
Approximate Date: ongoing

Project Description: The District has regulatory authority over a variety of waste to energy projects. The District works closely with project proponents to understand and comply with air quality regulations and obtain District approval, so that the GHG-reduction and alternative energy benefits are not out-weighed by increases in health-impacting pollutants, including oxides of nitrogen and air toxics.

Project name: Sonoma County Waste-to-Energy & Waste-to-Fuel
Sector: Waste
Approximate Date: Ongoing

Project Description: With nearly 24 million cubic yards of solid waste in place, the Central Disposal Site produces about 2,500 standard cubic feet/minute (scfm) of landfill gas. This gas is collected from 150 collection wells and transported through 4 miles of pipeline to the landfill gas-to-electricity facility and to the landfill gas-to-vehicle fuel pilot project.

The Landfill Gas Power Plant has a peak production over 7 mega-watts (MW) of renewable electrical energy 24 hours/day, seven days/week, enough to power a community of 17,000 people.

Up to 6 MW of the electrical energy is used by the Sonoma County Water Agency to help transport potable water throughout Sonoma County. Energy is also used for onsite power needs. The remaining energy is either used by the County jail (0.4 MW) or sold on the renewable energy market.

In addition to the Power Plant, a BioGas Filtration Plant (also called the compressed natural gas [CNG] plant) was completed in February 2009. CNG produced at the Central Disposal Site is currently used to fuel select vehicles in the Sonoma County Transit bus fleet. The plant uses membrane filtration to convert landfill gas to vehicle fuel where contaminants are removed via activated carbon and silica gel.

Gas production is currently below peak, for two primary reasons. First, successful diversion programs have diverted about 70% of the solid waste stream and reduced the per capita trash generated to 3.5 lbs per person, per day. Less solid waste means less landfill gas production. Select diversion programs include:

- Weekly curbside greenwaste pick-up, with material processed into compost for gardens;
- Re-use of lumber, posts, beams, and plywood, which are sold at about half the price of new material;
- Recycling of wood (unpainted lumber, pallets, plywood, wood chips, wood siding, and oriented strand board) into mulch;
- Free drop-off at “RecycleTown” for re-use and recycling of larger items, such as bicycles, furniture, and building materials, as well as toys, clothing, and textiles;
- House-hold hazardous waste drop-off site, business toxic waste drop-off site, community toxic waste collection, and the toxics Rover Pick-up program.

Second, between 2005 and 2010, no new waste was accepted at the landfill. The gap in landfilling also slowed production of landfill gas.

Additional information at: http://www.recyclenow.org/disposal/overview.asp.

Natural & Working Lands

Project name: Forest resource sustainability initiative
Sector: Natural & Working Lands - Forests & Biomass; Emissions - Inventory programs
Approximate Date: 2006 - Current

Project Description: The District is supporting sustainable forest management initiatives to restore the health of California's forest ecosystems and reduce the risk of catastrophic wildfire. Projects involve valuing the wide range of society and environmental benefits that are associated with treating forest fuels and the use of excess biomass for energy and production of biochar. These benefits include significantly improving regional air quality and reducing the risk of the California forests from becoming net emitter of GHGs -- and also protect watershed quality, soil productivity, wildlife habitat, recreational lands, forest resources, provide baseload power and economic support for rural communities, and reduce wildfire suppression costs. These projects directly contribute to the Scoping Plan objective to encourage sustainable activities that protect and maintain current forest stocks through reducing vegetative fuels that could feed wildfires and using this waste for biopower.
The District is leveraging resources and funds from our Clean Air Grant program and Supplemental Environmental Projects, with cooperation and coordination with forest land manager stakeholders including the USFS, CALFIRE, Sierra Nevada Conservancy, local Fire Districts, and industrial timber operators, and research institutions including UC Berkeley, UC Davis, and University of San Francisco.
Specific activities include:

- Demonstrating the significant air pollutant emissions benefits and economics from the utilization of excess biomass wastes for energy as an alternative to the standard disposal through open pile burning or mastication (chip and scatter).
- Developing a Biomass Waste for Energy GHG Offset Protocol.
- Establishing a methodology for, and quantify the, air pollutant benefits of forest hazardous fuels reduction projects that selectively remove small diameter trees and limbs and brush.
- Assisting the development of a regional network to economically collect biomass wastes for energy.
- Assessing the air pollutant emission benefits and economics of distributed forest biomass energy conversion systems in Placer County.
- Advocacy for, and active participation in, the development and implementation of energy pricing policy that values the full range of benefits of bioenergy and forest management while balancing ratepayer impacts.
- Technical support for the development of small scale distributed energy facilities throughout the Sierra Nevada's utilizing excess forest biomass as the feedstock and using best available control technologies.
- Developing of a Forest Biomass Waste Biochar GHG Offset Protocol.
- Quantifying and determining the impact of black carbon emissions from open pile burning.
- Advocacy for the investment of research and GHG funds toward further progressing sustainable forest management projects, particularly fuels reductions and bioenergy.
- Conducting research on quantifying the GHG benefits of reducing catastrophic wildfires as well as enhanced forest carbon sequestration opportunities to assist with the Scooping Plan target of maintaining current forest carbon sink.

Results achieved:

- Conduct of numerous projects in the foothills and mountains of the Sierra Nevada involving collection, process, and transport and utilize of excess forest biomass wastes for energy as an alternative to open pile burning. The use of over 20,000 bone dry tons of forest wastes has produced 20,000 MWh of renewable electricity, and reduced 7,000 tons of GHGs, 120 tons of PM, 32 tons NOx, 1,000 tons CO, and 100 tons NMOC. Emission benefits were published in the peer-reviewed Journal of the Air and Waste Management Association. For these efforts we were honored with a 2011 US EPA Clean Air Excellence Award.
- Developed a Biomass Waste for Energy GHG Offset Protocol that has been extensively peer-reviewed, and endorsed by the California Board of Forestry and CAPCOA GHG Exchange, to rigorously quantify the GHG reductions of biomass energy projects. We have conducted a number of projects under this protocol, and are in the process of having them verified and posted into the upcoming CAPCOA Exchange.
- Quantified the significant air pollutant reductions of forest hazardous fuel treatment projects. Determining they result from reducing wildfire size and severity and tree mortality, stimulating forest growth, producing wood products that sequester carbon and displace energy intensive alternatives, and using excess biomass wastes for energy to displace fossil fuels. We plan to refine and publish this work in the coming year.
- Participated as an intervener in the CPUC development and implementation of SB1122 and Feed in Tariff programs. These programs are intended to incubate and incentivize the investment in new strategically located distributed forest biomass energy operations; and will provide valuable baseload renewable electricity from woody biomass in regions that are at risk for catastrophic wildfire. Current efforts include streamlining interconnection, developing a power purchase template, establishing what qualifies as sustainable biomass, and ensuring equity to ratepayers.
- Provided multiple briefings on our forest resource sustainability initiatives in numerous workshops and conferences throughout the State and hosted several tours and forest field events in concert with UC Berkeley College of Natural Resources staff at their Blodgett Forest Research Station.

Placer County
AIR POLLUTION CONTROL DISTRICT

Vegetation

Project name: Urban Forest Air Quality Development Program
Sector: Vegetation – Urban Trees & open space
Approximate Date: 2008 - 2018

Project Description: The "Urban Forest Air Quality Development Program" is a targeted urban-forest management program to reduce the total emissions of biogenic volatile organic compounds (BVOC) from urban trees. Through a combination of community education and governmental policy change over several years, the strategy shifts to the planting of low BVOC-emitting trees rather than medium- and high-emitting trees. The measure calls for a modest number of low-emitting trees to be planted that otherwise would have been medium- or high-emitting trees. The Urban Forest Air Quality Development program was recently included as an emerging/voluntary control measure in the Sacramento Regional 8-hour Ozone Attainment and Reasonable Further Progress Plan.

Results achieved: Although no actual GHG emission reductions were quantified for this strategy, BVOCs increase the atmospheric lifespan of methane and ozone production, while the net impact of aerosol compounds on global warming is also uncertain.[1] There is potential for additional GHG reduction benefits to be realized though carbon sequestration, urban cooling, and decreased energy use.

Project name: Tree Planting
Sector: Vegetation – Urban Trees and Forest
Approximate Date: 2008 - Present

Project Description: The SCAQMD has implemented urban tree planting and reforestation projects to for the reduction of GHGs, clean air benefits, and help to provide employment opportunities. The SCAQMDs Tree Partnership program provided funds to help cities plant urban trees during the economic downturn while providing employment opportunities to students. Under this program over 9,000 California native low biogenic VOC trees were planted and over 500 students were employed. The SCAQMD is also funding an urban tree planting project with the LA Conservation Corps in the area surrounding the Chevron El Segundo refinery. Under this program the Urban Forestry protocol is being followed to identify the types of GHG reductions that be developed under this project protocol. Currently over a thousand trees have been planted by LA Conservation Corps. The SCAQMD is also funding a reforestation effort in the Station Fire burn area of the Angeles National Crest Forest for GHG reductions. Working with the US Forest Service and the National Forest Foundation over 400,000 seedlings have been planted.

Results achieved: Working with the US Forest Service and the National Forest Foundation over 400,000 seedlings have been planted.

Miscellaneous

Project Name: San Luis Obispo County APCD's Climate Change Program in San Luis Obispo County
Sector: Miscellaneous
Approximate Date: 2005 - present

[1] Peñuelas, J., T. Rutishauser, I. Filella. 2009. "Phenology Feedbacks on Climate Change." *Science* 324, p887-888.

Project Description: At the APCD Board meeting in May 2005, staff was directed to evaluate potential actions the District could take locally to address the issue of climate change. At its November 2005 Board meeting, action was taken to adopt a resolution acknowledging the significance of climate change and the importance of local actions to reduce its impacts and approve seven key strategies for staff to implement. The seven actions include: 1) Prepare a countywide inventory of greenhouse gas emissions, 2) Target a percentage of mitigation grant funds for greenhouse gas emission reductions, 3) Evaluate and quantify the GHG reduction benefits of existing district programs, 4) Develop public education and outreach campaigns on climate change, 5) Encourage and provide support for local governments; 6) Develop partnership with Cal Poly for addressing climate change, and 7) Join the California Climate Registry and encourage local industry participation. Since 2005, the SLO County APCD has been actively working on the actions identified above with primary emphasis on assisting local governments and implementing public outreach programs. Through the formation of the City/County GHG Stakeholder Committee that is comprised of all incorporated cities and county staff, the APCD continues to discuss State efforts regarding climate change (e.g., AB 32, ARB's Scoping Plan, and SB 375) and share issues that individual jurisdictions have encountered during the public discussion, inventory and climate action plan process.

Project Name: Stewardship Efforts
Sectors:
Energy - alternative
Energy - building energy efficiency
Transp.- Commute trip reduction
Transp.- Vehicle projects (eg: alt./electric)
Water Supply
Water Use
Approximate Date: June, 2011 – continuous

Project Description: The District has made significant improvements to the District's office building and operations which reduces negative impacts on the environment, and improves the health and comfort of building occupants, thereby improving building performance.

Specific activities include:

- Upgrade of District vehicle fleet mix with low emission vehicles
- Encouragement of carpool with flexible work schedules
- Teleconference capabilities
- Installation of a 29 kilowatt solar photovoltaic system
- Lighting fixture upgrades
- Control panel heating and cooling controls
- Upgrade of all Plug Load Occupancy units with motion sensor devices
- Installation of an advanced hybrid water heating system
- Attic and ceiling insulation upgraded from R19 to R39

- Upgrade of all HVAC units to highest available SEAR rating along with economizers and R8 ducting

Results achieved:

- Reduction of non-methane organic gases (NMOG) and nitrous oxides (NOx); toxic air pollutants including benzene, formaldehyde, acetaldehyde, and 1,3 butadiene; and Greenhouse Gases (CO2).
- Production of 46.1 Mw-hrs of renewable electrical energy which is the equivalent to 26.3 metric tons of CO2 from power plants.
- Reduction in energy loss by approximately two (2) percent, which is equivalent to consuming three (3) percent less energy

Project name: SCAQMD Regulation 27 – Climate Change
Sector: Miscellaneous
Approximate Date: 2008 to present

Project Description: The SCAQMD climate change rules create a voluntary Greenhouse Gas Reduction Program administered by SCAQMD. Under this voluntary program SCAQMD has approved GHG project protocols that can be used to generate GHG reductions. The GHG reduction projects can be undertaken by a third party that needs verification of the project or funds can be received by SCAQMD to undertake a project which then would result in retired GHG credits.