



**Climate Policies and Programs at the
Federal, State, and Regional Levels:
*Context and Opportunities for Local Action***

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Marin
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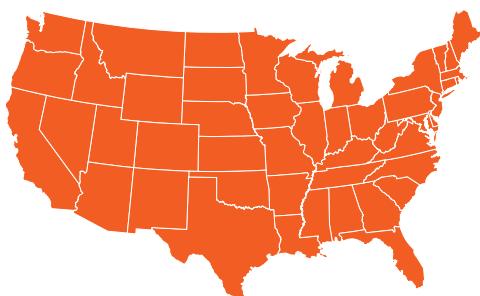
Introduction

Local actions on climate change are taking place within a fast-changing context of federal, state and regional policies and programs. It will be increasingly important for local stakeholders to understand the opportunities provided by this broader working environment as they make strategic decisions on local program and funding priorities. Where cities and counties can add the greatest value to the growing climate movement now depends significantly on what others are doing and planning in the Bay Area, Sacramento and Washington D.C. This is particularly true in the near-term, while there is no agreed-upon federal/state/regional structure for addressing climate change in a coordinated and collaborative fashion.

This memo, produced in early 2015 by Elmwood Consulting on behalf of the Marin Community Foundation, highlights and summarizes key federal, state and regional efforts on both greenhouse gas emissions (Part I) and adaptation to climate change impacts (Part II). Links are provided for each initiative for more detailed information. Part III presents a set of opportunities for local governments based on these federal, state and regional climate advances.

Part I: **GHG Reduction**

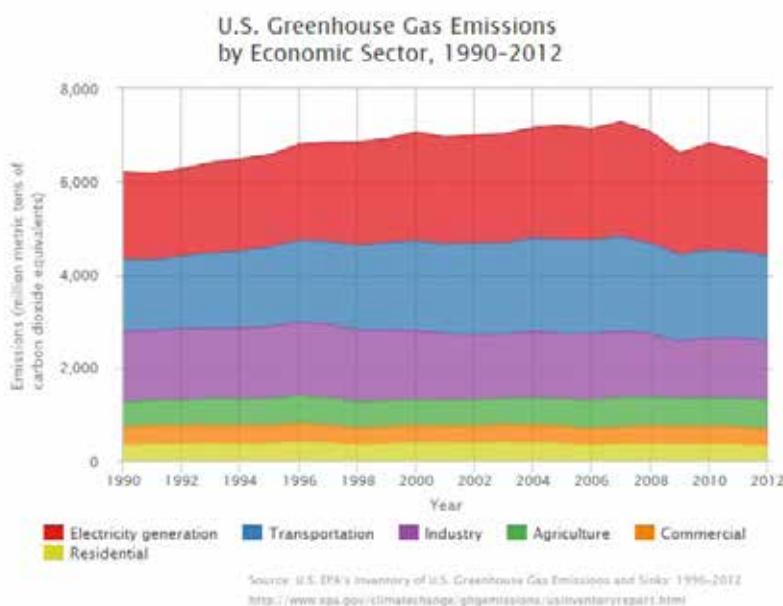




National

Figure 1 shows the key sectors for GHG emissions in the United States and the trends in emissions over the last twenty years. Electricity generation, largely due to coal power plants in the Midwest, East and South, and transportation are the two largest sectors, followed by industry, agriculture, and commercial/residential natural gas use.

Figure 1: U.S. GHG Emissions by Sector



1. **President's Climate Action Plan** (2013) – The first section of the 21-page summary plan outlines 10 strategies that federal agencies are advancing or will advance to “cut carbon pollution in America.” These strategies include:
 - Deploying Clean Energy
 - Building a 21st Century Transportation Sector
 - Cutting Energy Waste in Homes, Businesses and Factories
 - Reducing Other GHGs (methane, hydrofluorocarbons, etc.)Other sections of the plan address climate impacts and international leadership.

2. [EPA Clean Power Plan](#) (2014) – Proposed EPA rule to reduce carbon emissions from existing power plants nationally by 30 percent from 2005 levels. The EPA received more than 2 million comments on the proposal during the official comment period ending in December 2014. The regulation development phase began in early 2015. A number of states and business interests have sued the EPA over the proposed rule.

Currently, there are limits on mercury and other pollutants, but none on carbon. Power plants are the largest source of carbon pollution in the U.S., accounting for roughly one-third of all domestic greenhouse gas emissions. The proposal will also cut pollution that leads to soot and smog by over 25 percent in 2030. Children, the elderly, and the poor are most vulnerable to a range of climate-related health effects, including those related to heat stress, air pollution, extreme weather events, and others. The rule would lead to climate and health benefits worth an estimated \$55 billion to \$93 billion in 2030, including avoiding 2,700 to 6,600 premature deaths and 140,000 to 150,000 asthma attacks in children.

The Clean Power Plan follows earlier action by the EPA in September 2013 to propose [tougher carbon standards](#) for new power plants. These standards will be finalized in mid-2015.

3. [White House Program to Accelerate Clean Energy](#) (2015) – Uses public-private partnerships and streamlining the federal permitting process to meet the Administration's clean-energy goals: to install 100 megawatts of renewable capacity across federally subsidized housing by 2020, permit 10 gigawatts of renewable projects on public lands by 2020, deploy 3 gigawatts of renewable energy on military installations by 2025, and double wind and solar electricity generation in the United States by 2025.
4. [Federal Initiatives on Short-Lived Climate Pollutants](#) (2014) New actions to reduce HFCs and methane, two potent short-lived climate pollutants. For HFCs, used in air conditioning and refrigeration, federal leaders have been working with foreign governments, industry, environmental groups, and foundation partners to amend the Montreal Protocol that would phase down the production and consumption of HFCs globally. For methane emissions from landfills, agriculture, coal mining and oil/gas systems, the Administration released a [Strategy to Reduce Methane Emissions](#) that builds on progress to date and takes steps to further cut methane emissions. In January 2015, a new goal was announced to cut methane emissions from the oil and gas sector by 40-45 percent from 2012 levels by 2025.
5. [Federal Passenger Car And Light Truck Regulations](#) (2010, 2012) – Important new rules increasing fuel economy of new cars/light trucks to 34 MPG for 2016 model year (15% improvement over 2011) and 55 MPG for 2025 model year (90% improvement over 2011). Direct result of California's groundbreaking AB 1493 (2002) that forced carmakers to negotiate federal deal after years of squashing national attempts to increase MPG.

6. [Federal Standards for Heavy-Duty Engines and Vehicles](#) (2014) — In February 2014, President Obama directed EPA and the Department of Transportation to issue the next phase of fuel efficiency and greenhouse gas standards for medium- and heavy-duty vehicles by March 2016. These will build on the first-ever standards for medium- and heavy-duty vehicles (model years 2014 through 2018), proposed and finalized earlier by the administration.
7. [U.S.- China Climate Change Agreement](#) (2014) — In November 2014, the U.S. and China announced a climate change agreement in which both countries would commit to specific GHG reductions. With the EU, which has already committed to emissions targets, the three together are responsible for more GHGs annually than the rest of the world combined. The U.S. pledge is to reduce GHGs by 26-28% from 2005 levels by 2025. Meeting the target will require significant new GHG measures. In China, the agreement calls for reaching peak GHGs in 2030 and beginning reductions immediately. This trajectory will also require tougher measures than have been previously planned or implemented in China.
8. [Executive Order 13514 – Federal Leadership in Environmental, Energy, and Economic Performance](#) (2009) calls for federal agencies to set targets for GHG reduction and other sustainability topics for their operations and to implement plans to attain those reductions. Targets include:
 - 30% reduction in vehicle fleet petroleum use by 2020;
 - 26% improvement in water efficiency by 2020;
 - 50% recycling and waste diversion by 2015;
 - 95% of all applicable contracts will meet sustainability requirements;
 - Implementation of the 2030 net-zero-energy building requirement;
 - Implementation of the storm water provisions of the Energy Independence and Security Act of 2007, section 438, and;
 - Development of guidance for sustainable Federal building locations in alignment with the Livability Principles put forward by the Department of Housing and Urban Development, the Department of Transportation, and the Environmental Protection Agency.

The Office of Management and Budget produces [scorecards](#) annually reporting on the progress of each federal agency towards the goals.

9. [Key State and City Climate Plans](#) — A number of U.S. cities and states have produced climate action plans to serve as roadmaps to their GHG reduction goals. Exemplary plans include:

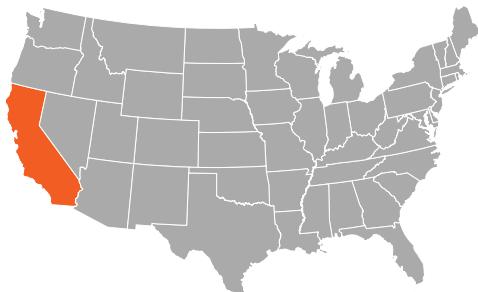
[PlaNYC](#) (2007, 2013) — New York City's comprehensive plan for sustainability and resiliency, originally released in 2007 and updated in 2013 post-Sandy with [A Stronger More Resilient New York](#). The overall work includes an [annual progress report](#).

[Chicago Climate Action Plan](#) (2008) — Goals include GHG emissions reduction of 80 percent below 1990 levels by 2050 with an interim goal of 25 percent below 1990 levels by 2020. The plan outlines 35 actions in five categories related to energy efficient buildings, clean energy, transportation, waste, and adaptation.

[King County Climate Plan](#) (2007) — Includes strategies to both reduce greenhouse gas emissions and adapt to projected climate change impacts. The plan details near-term steps to reach a long-term goal of reducing GHG emissions by 80 percent below current levels by 2050.

[Portland Climate Action Plan](#) (2009) — Plan for City of Portland and Multnomah County outlines strategies for reducing GHGs to 10 percent below 1990 levels by 2010, 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050.

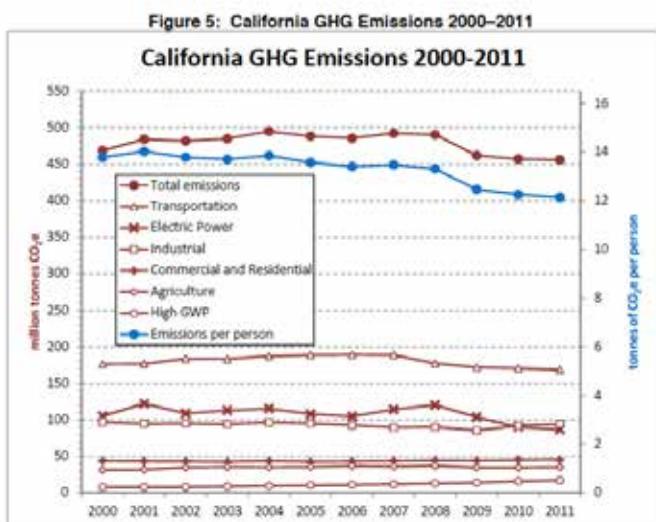
10. [Proven and Promising From U.S. Communities](#) (2014) — Report presents selected, successful GHG reduction actions taken by U.S. cities for energy, transportation, waste, agriculture and other sectors. Report produced by Sonoma County's Center for Climate Solutions (formerly the Climate Protection Campaign) to support the development of the new Climate Action 2020 in Sonoma County.



California

Figure 2 shows the key sectors for GHGs in California and the statewide trends in emissions over the last decade. Total emissions have declined, due to the Great Recession and the initial impacts of California climate policies and other factors. Transportation is the largest sector, followed by industry, electricity generation, commercial/residential natural gas use, agriculture and high-global warming potential gases (primarily fluorocarbons).

Figure 2: California GHGs



Source: ARB

Figure 3 demonstrates how California GHGs have first leveled off and then declined in the last decade while the state's economy and total population have both grown significantly.

Figure 3: GHGs, GSP and Population

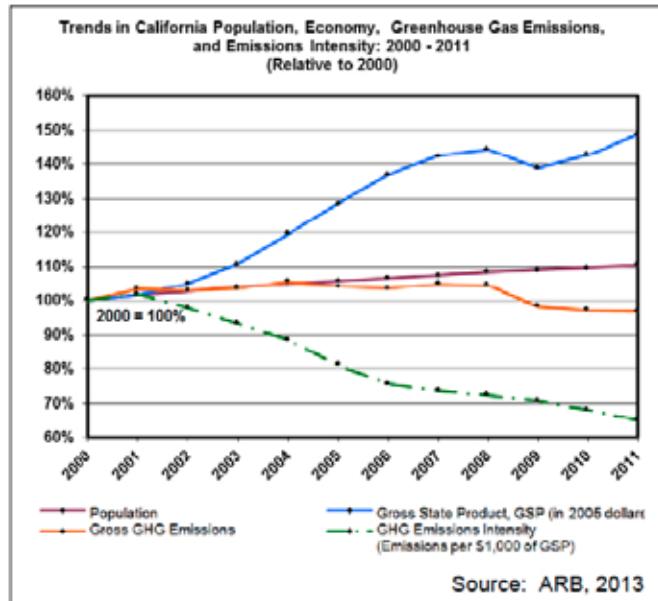
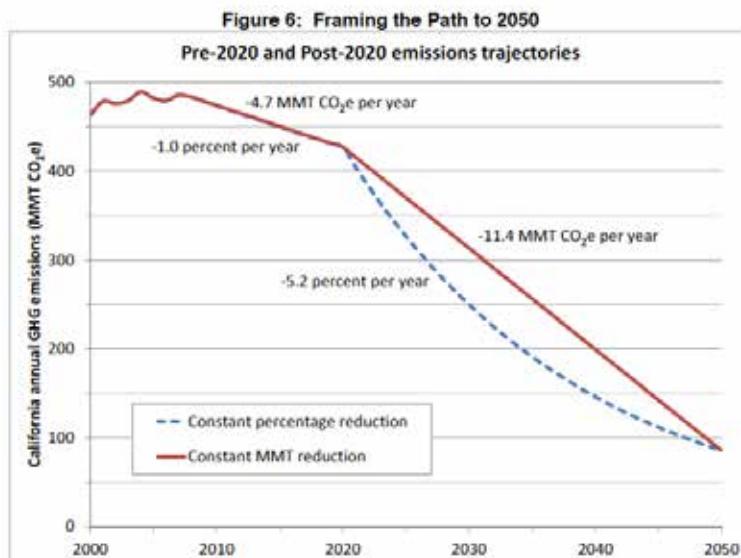


Figure 4 presents the great challenge ahead to reduce California's GHG by 80% by 2050, the goal framed by Executive Order S-3-05 and the newly introduced SB 32.

Figure 4: The Path to 2050



Source: ARB

1. [Executive Order S-3-05](#) (2005) — Executive Order by Governor Schwarzenegger in 2005 that set the first GHG goals for California—by 2010, reduce GHGs to 2000 levels; by 2020, reduce GHGs to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels. Nine years later, S-3-05 is still the only state goal for beyond 2020.
2. [AB 32](#) (2006) — *Global Warming Solutions Act of 2006* — State legislation, authored by Assemblyperson Fran Pavley and Assembly Speaker Fabian Nuzez and signed by Governor Schwarzenegger, that requires California to reduce its GHG emissions to 1990 levels by 2020 — a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario. The legislation requires ARB to adopt regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. It calls for a Scoping Plan (implementation) to be completed and then updated every 5 years.

AB 32 includes the major GHGs and groups of GHGs:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)
- Nitrogen trifluoride* (NF_3)

ARB also recognizes that other *non-GHG* compounds, including some aerosols, can have a strong heat forcing effect on the atmosphere. This includes black carbon, comprised of microscopic particles that are emitted from incomplete combustion of biomass and fossil fuels. Reducing black carbon and other so-called short-lived climate pollutants (methane, tropospheric ozone and some hydrofluorocarbons) will help to slow the acceleration of climate change sooner than by reducing emissions of other GHGs alone. It will also improve public health, and will be an important element of California’s climate change program strategy.

3. [AB 32 Scoping Plan I](#) (2008) — Contains the initial main strategies to reduce GHGs statewide. Scoping Plan I has a range of actions, including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a [cap-and-trade](#) system, and an AB 32 program implementation fee regulation to fund the program. ARB conducted initial workshops in 2007-08, produced a Draft Scoping Plan, held additional workshops in 2008, and approved the final Scoping Plan in December 2008.

AB 32 included language to “encourage” local governments to take steps to reduce GHGs in their communities by 15% (in line with AB 32’s goal) but contained no requirements for local action. The plan listed ways the State will support local actions with data, tools, etc. and briefly mentioned the new SB 375 requirements for local

GHG reduction from transportation and land use.

"Local governments are essential partners in achieving California's goals to reduce greenhouse gas emissions. They have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect greenhouse gas emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the proposed measures to reduce greenhouse gas emissions rely on local government actions."

4. [**Executive Order B-16-2012**](#) (2012) – Executive Order by Governor Brown that calls on state agencies to "support and facilitate the rapid commercialization of zero emission vehicles." The order calls on the CPUC to work with partners to set up infrastructure in metro areas to support 1 million ZEVs on the road by 2020. It also calls for the electricity grid to be improved to handle large numbers of electric vehicles, and related actions. Finally, the order also calls for the California transportation sector to reduce its GHGs by 80% by 2050 in line with S-13-05.
5. [**AB 32 Scoping Plan II**](#) (2014) – Major policy and action document (the most important current state report) approved by ARB in May 2014. Summarizes the considerable progress made towards the 2020 AB 32 goal (1990 levels). [**Appendix B**](#) provides a comprehensive list of actions taken to implement Scoping Plan I.

For each of 9 sectors (see below), outlines key issues, new strategies, and 6-10 action recommendations for moving California to the 2050 goal called out in Executive Orders S-3-05 and [**B-16-2012**](#). The report also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

1. Energy
2. Transportation: Vehicles, Sustainable Communities, Housing, Fuels and Infrastructure
3. Agriculture
4. Water
5. Waste Management
6. Natural and Working Lands
7. Short-Lived Climate Pollutants
8. Green Buildings
9. Cap-and-Trade Regulation

Scoping Plan II devotes somewhat more attention to the importance of local and regional GHG reduction efforts (pages 111-13), citing examples of a number of local projects and important financing mechanisms, but still does not require local goals or specific actions.

"As California continues to build its climate policy framework, there is a need for local government climate action planning to adopt mid-term and long-

term reduction targets that are consistent with scientific assessments and the statewide goal of reducing emissions 80 percent below 1990 levels by 2050. Local government reduction targets should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals. Improved accounting and centralized reporting of local efforts, including emissions inventories, policy programs, and achieved emission reductions, would allow California to further incorporate, and better recognize, local efforts in its climate planning and policies."

6. **SB 605 - Short-Lived Climate Pollutant Strategy** (2014) – Directed ARB to develop a strategy by January 1, 2016 to reduce short-lived climate pollutant in three main components:

- **Black carbon**, a component of fine particulate matter, is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires.
- **Fluorinated gases** (F-gases), the fastest growing source of greenhouse gas emissions in California and globally, come from leaks of these gases in refrigeration and air-conditioning systems, and from aerosol propellants, fire suppressants, and foam-expansion agents.
- **Methane** (CH_4), the principal component of natural gas, is growing as a result of human activities in the agricultural, waste treatment, and oil and gas sectors.

7. **Governor Brown January 2015 State Address** (2015) – Outlined the Governor's vision for climate action and proposed 3 new goals for the next 15 years.

"California has the most far-reaching environmental laws of any state and the most integrated policy to deal with climate change of any political jurisdiction in the Western Hemisphere. Under laws that you have enacted, we are on track to meet our 2020 goal of one-third of our electricity from renewable energy. We lead the nation in energy efficiency, cleaner cars and energy storage. Recently, both the Secretary-General of the United Nations and the President of the World Bank made clear that properly pricing carbon is a key strategy. California's cap-and-trade system fashioned under AB 32 is doing just that and showing how the market itself can generate the innovations we need. Beyond this, California is forging agreements with other states and nations so that we do not stand alone in advancing these climate objectives.

These efforts, impressive though they are, are not enough. The United Nations' Intergovernmental Panel on Climate Change, backed up by the vast majority of the world's scientists, has set an ambitious goal of limiting warming to 2 degrees Celsius by the year 2050 through drastic reductions of greenhouse gases. If we have any chance at all of achieving that, California, as it does in many areas, must show the way. We must demonstrate that reducing carbon is compatible with an abundant economy and human well-being. So far, we have been able to do that.

In fact, we are well on our way to meeting our AB 32 goal of reducing carbon pollution and limiting the emissions of heat-trapping gases to 431 million tons by 2020. But now, it is time to establish our next set of objectives for 2030 and beyond.

Toward that end, I propose three ambitious goals to be accomplished within the next 15 years:

- *Increase from one-third to 50 percent our electricity derived from renewable sources*
- *Reduce today's petroleum use in cars and trucks by up to 50 percent*
- *Double the efficiency of existing buildings and make heating fuels cleaner.*

We must also reduce the relentless release of methane, black carbon and other potent pollutants across industries. And we must manage farm and rangelands, forests and wetlands so they can store carbon. All of this is a very tall order. It means that we continue to transform our electrical grid, our transportation system and even our communities.

I envision a wide range of initiatives: more distributed power, expanded rooftop solar, micro-grids, an energy imbalance market, battery storage, the full integration of information technology and electrical distribution and millions of electric and low-carbon vehicles. How we achieve these goals and at what pace will take great thought and imagination mixed with pragmatic caution. It will require enormous innovation, research and investment. And we will need active collaboration at every stage with our scientists, engineers, entrepreneurs, businesses and officials at all levels.

Taking significant amounts of carbon out of our economy without harming its vibrancy is exactly the sort of challenge at which California excels. This is exciting, it is bold and it is absolutely necessary if we are to have any chance of stopping potentially catastrophic changes to our climate system."

8. **Executive Order B-30-15 (2015)** — Governor Brown's April 2015 calls for an interim target—40% reduction in GHGs by 2030—and orders ARB to update the Scoping Plan and state agencies to implement measures to achieve the 2030 target.
9. **SB 32 — Pavley 2014**
New bill introduced by Fran Pavley in December 2014 to require ARB to set new GHG goal for 2050—80% below 1990 levels—and to set interim goals for 2030 and 2040. This would turn the goal for 2050, called out in the Executive Order in 2005, into state law.

New 2015 Climate Change Bills in Legislature

Set of new bills introduced in early 2015 by Kevin De Leon, Mark Leno and others to set tougher GHG goals, implement key elements of Scoping Plan II, divest public

pension plans from coal, and other topics. SB 350 (De Leon-Leno) would set goals to reduce petroleum use by 50%, have 50% of electricity come from renewable sources, and increase energy efficiency in all existing buildings by 50% -- all by the year 2030. SB 189 (Hueso) proposes an expert Committee to advise and inform state clean energy and climate actions that ensure maximum job creation and economic benefits to all Californians across the state. SB 185 (De León) ensures that the state's largest public pension funds lead by example by moving their investments beyond coal.

10. **Cap and Trade Program** (2013) — Key market based regulation on large polluters and a major new source of GHG reduction funding implemented in 2012. Cap-and-trade sets a firm annual limit or cap on GHGs from the regulated sectors. The cap is reduced approximately 3 percent each year. Companies must hold permits to pollute so they must either reduce their GHGs or buy permits. Transportation fuels will come under the cap-and-trade program in 2015.

Permit revenue is a very substantial new source of funding for GHG reduction, raising more than \$1 billion in the early years of the program. Funds will be dispersed through a variety of programs administered by state agencies.

SB 535 requires that 25% of the funding is spent on projects that benefit disadvantaged communities, while at least 10% of funding is spent on projects located in disadvantaged communities.

California is working closely with British Columbia, Ontario, Quebec and Manitoba through the **Western Climate Initiative** to develop harmonized cap and trade programs that will deliver cost-effective emission reductions. The WCI jurisdictions have formed a non-profit corporation, WCI, Inc. to provide coordinated and cost-effective administrative and technical support for its participating jurisdictions' emissions trading programs.

11. **SB 375** (2008) — To-date, seven regions, including the San Diego, Los Angeles, Bay Area and Sacramento regions, have prepared a "sustainable communities strategy" (SCS) as part of their regional transportation plans (RTP). To initiate these planning processes, ARB, under the Sustainable Communities and Climate Protection Act of 2008, worked with each of the 18 metropolitan planning organizations (MPO), to set regional targets for GHG emissions reductions from passenger vehicle use for 2020 and 2035. The other SCS plans, primarily from the San Joaquin Valley, are expected to be completed in 2015.

The SCS contains land use, housing, and transportation strategies to allow the region to meet its GHG reduction target. The RTP/SCS guides the transportation policies and investments for the region. ARB must review the adopted SCS to confirm and accept the MPO's determination that the SCS, if implemented, would meet the regional GHG targets. SB 375 also establishes incentives to encourage local governments and developers to implement the SCS. Developers can get relief from

certain environmental review requirements under the [California Environmental Quality Act \(CEQA\)](#) if their new residential and mixed-use projects are consistent with a region's SCS.

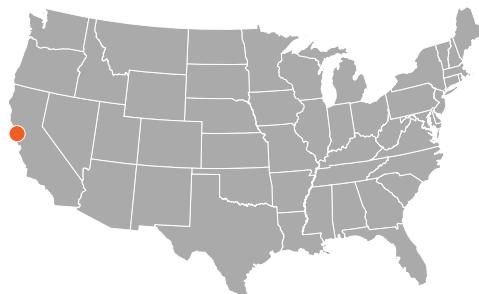
12. [Renewable Portfolio Standard](#) (2002, 2006, 2011) — One of the most aggressive renewable standards in the country, the RPS, established in 2002 by the legislature, requires PG&E and other investor-owned utilities to provide 33% of their electricity supply from solar, wind, geothermal, small hydro and other renewable sources by 2020. (PG&E is currently at about 25%). The California Public Utilities Commission and the California Energy Commission jointly administer the RPS program, reviewing and approving utilities' plans, and monitoring compliance.
13. [Low Carbon Fuel Standard](#) (2007): Executive Order S-1-07 called for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. This was the first such carbon standard in the world. The order instructs the California Environmental Protection Agency to develop the LCFS to include not only tailpipe emissions but also those from fuel production, distribution, and use, a "well-to-wheels" approach. Regulations were initially adopted in 2009 and the EPA continues to develop the program.
14. [Passenger Vehicle Standards](#) (2002): Groundbreaking legislation (AB 1493) authored by California Assemblyperson Fran Pavley, directed ARB to adopt tough GHG-reducing regulations for new cars. The new regulations, which survived court challenges and a refusal by the Bush administration to grant California a needed waiver (later granted by the Obama administration), led directly to a far-reaching federal-level agreement on MPG standards between government and car manufacturers. The federal regulations, based on the California initiative, will eventually increase fuel efficiency to 55 MPG for new cars in 2025.
15. [CaliforniaFIRST^t](#) and [HERO](#) (2014)
CaliforniaFIRST is a statewide program where a county government and private financing companies partner to allow home and business owners to receive upfront funding for energy efficiency, renewable energy and water efficiency improvements and to repay the costs on their property tax bills over the course of up to 20 years.

The Home Energy Renovation Opportunity (HERO) program is a nationwide financing program that is now implemented in more than 225 California communities. HERO provides financing for energy efficiency, water efficiency, and renewable power projects for homes with long payback periods through property taxes.
16. [Cal Green Code](#) (2011) — California Green Building Standards Code is Part 11 of the California Building Standards Code and is the first statewide "green" building code in the U.S. The purpose of CALGreen is to improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental

impact and encouraging sustainable construction practices. To achieve CALGreen Tier 1, buildings must comply with the latest edition of "Savings By Design, Healthcare Modeling Procedures". To achieve CALGreen Tier 2, buildings must exceed the latest edition of "Savings By Design, Healthcare Modeling Procedures" by a minimum of 15%.

17. [**AB 341 and SB 939**](#) (2013/1989) — SB 939 established targets for each county for diversion of solid waste from landfills. The targets were 25% for 2000 and 50% for 2010. Having attained the 2010 goal statewide through a wide range of local and state projects and programs, Governor Brown and the legislature set a new statewide 75% target for 2020 (AB 341) for recycling, compost or source reduction. The new target is an overall state goal, not a new requirement for each local diversion program and will feature a statewide strategy combining state, regional and local efforts.
18. [**State of California 2015 General Plan Guidelines**](#) — The Governor's Office of Planning and Research is developing new guidelines (updating the 2003 version) that will include climate change. The guidelines provide direction for local governments in preparing their general plans. The new guidelines will be public in 2015. Currently, the state provides a [**Climate Change, Land Use and Infrastructure**](#) section that provides information linking climate with current general plan elements.
19. [**CEQA Climate Change Guidelines**](#) (2010) — In 2007, AB 97 required the Office of Planning and Research to develop and Resources Agency to adopt new CEQA guidelines concerning climate change. The new regulations, finalized in 2010, include:
 - Lead agencies must analyze the greenhouse gas emissions of proposed projects, and must reach a conclusion regarding the significance of those emissions. (See CEQA Guidelines § 15064.4.)
 - When a project's greenhouse gas emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions. (See CEQA Guidelines § 15126.4(c).)
 - Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change. (See CEQA Guidelines § 15126.2(a).)
 - Lead agencies may significantly streamline the analysis of greenhouse gases on a project level by using a programmatic greenhouse gas emissions reduction plan meeting certain criteria. (See CEQA Guidelines § 15183.5(b).)
 - CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply, and ways to reduce energy demand, including through the use of efficient transportation alternatives. (See CEQA Guidelines, Appendix F.)
20. [**OPR Annual Local Government Planning Survey**](#) (2012) — OPR's annual survey of local government activities, last completed with data for 2011, included a series of basic questions about climate planning by cities, counties and other government entities.

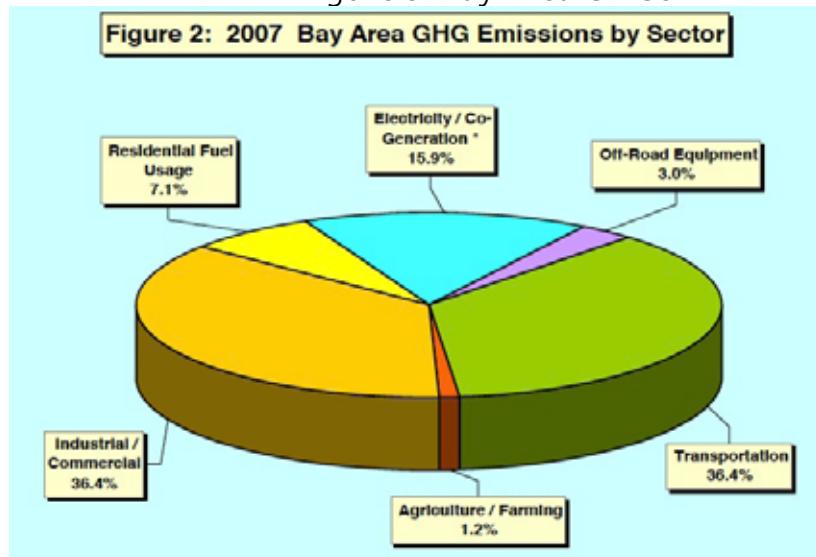
- 20 percent of the 451 respondents said they had adopted policies or programs to address climate change and/or reduce GHGs. 60 percent reported such policies or programs were in development while 20% they had taken some similar action on climate.
- Of those who reported “adopted” or “in-progress,” just over 60% were involved with climate action plans, 30% reported “greenhouse reduction plans,” and 20% reported sustainability plans. Just fewer than 60% were adopting general plan policies while 35% were adopting general plan implementation measures. About 15% reported enacting ordinances related to climate change.
- 70 percent of active respondents said they were addressing GHG emissions while just 20% said they were addressing the impacts of climate change.
- 50 percent of jurisdictions reported they have adopted GHG reduction goals, while another 13% are in-progress and 37% report no GHG goals.
- Only 20% of jurisdictions reported they have a mechanism for tracking and reporting GHG emissions.



Bay Area – Regional Projects

Figure 5 shows Bay Area GHG emissions by sector as of 2007, the last year BAAQMD published the GHG inventory. The inventory, which is currently being updated, has likely not changed significantly in the last few years.

Figure 5: Bay Area GHGs



Notes:

Transportation: $\frac{3}{4}$ from passenger vehicles

Industrial/Commercial: Refineries, boilers, building heating, refrigerants, waste management

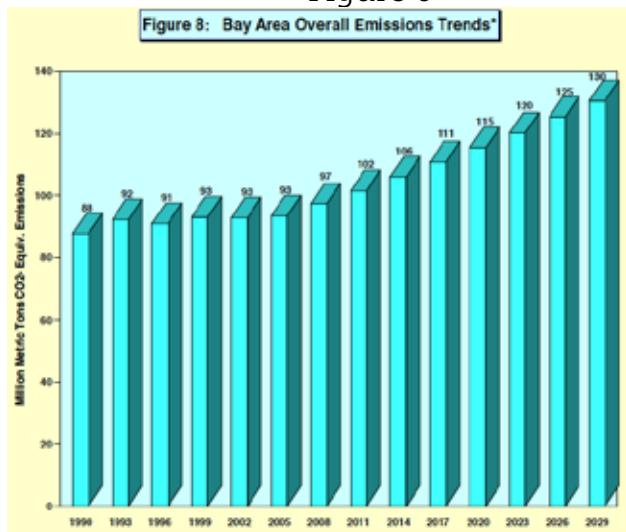
Electricity Generation: $\frac{1}{2}$ in Bay Area, $\frac{1}{2}$ imported

Residential: Heating and cooking

Source: BAAQMD

Figure 6 shows BAAQMD's projection for Bay Area GHGs under a business as usual scenario.

Figure 6



Note: 2011 and beyond from BAAQMD projection for business as usual

1. **BAAQMD Regional Climate Protection Strategy** (2014-16) — The Bay Area Air Quality Management District has adopted the state's 2050 goal—80% below 1990 levels—and is developing the Regional Climate Protection Strategy to attain the goal as part of the 2016 Clean Air Plan. As a first step, BAAQMD is implementing a near-term 10-Point work program, including:
 1. Set GHG Reduction Goal
 2. Update GHG Inventory and Forecasting
 3. Implement GHG Emissions Monitoring
 4. Develop Regional Climate Action Strategy
 5. Support and Enhance Local Action
 6. Accelerate Rule Development
 7. Expand Enforcement
 8. Launch Climate Change & Public Health Impacts Initiative
 9. Report Progress to the Public
 10. Explore the Bay Area's Energy Future
2. **Plan Bay Area** (2013) — Long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. The Plan was developed and jointly approved by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). The Plan includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan.

Plan Bay Area marks the nine-county region's first long-range plan to meet the requirements of California's landmark SB 375, which calls on each of the state's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. Working in collaboration with cities and counties, the Plan advances

initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy.

The first two targets for Plan Bay Area are required by SB 375 and address the respective goals of climate protection and adequate housing:

- Reduce per-capita carbon dioxide emissions from cars and light-duty trucks by 7 percent by 2020 and by 15 percent by 2035 House by 2035
- 100 percent of the region's projected 25-year growth by income level, without displacing current low-income residents.

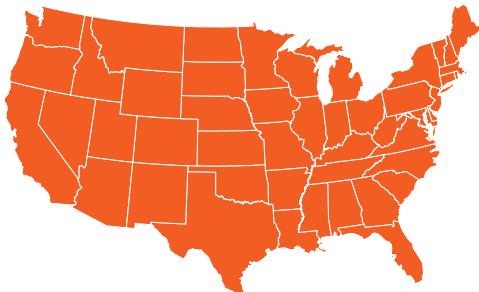
Plan Bay Area includes **8 other performance measures** addressing open space, equity, health, safety, economic vitality and other topics.

3. **Local Climate Action Plans**: 52 of the Bay Area's 101 cities and 9 counties have approved climate action plans that set goals and strategies for reducing GHGs in their communities. Chart A on the following page provides summary information about CAPs by county.

	ALAMEDA	CONTRA COSTA	MARIN	NAPA	SAN FRANCISCO	SAN MATEO	SANTA CLARA	SOLANO	SONOMA
Plan Bay Area (2013) – BCDC Bay Plan (2012) – Integrated Regional Water Management Plan (2013) – ABAG Regional Hazard Mitigation Plan (2010)									
Regional Plans									
Cities with Climate Action Plans (GHGs) March 2015	15/15 (All cities completed)	4/20 (2 in progress)	10/12	0/6 (1 in progress)	1/1	9/20	3/16 (4 in progress)	3/8 (5 in progress)	10/10
CAP Goals for 2020 (unless noted)	36% below 2005 (1) 33% below 2000 (1) 25% below 2005 (2) 25% below 2004 (2) 20.0% below BAU (1) 20% below 2005 (1) 15% below 2005 (5) 15% below 2008 (1) 12.5% below 2005 (1)	15% below 2005 (1) 25% below 2005 (5) 15% below 1990 (1) 25% below 2005 (1) 15% below 2005 (2) 1990 level (1)	N/A	25% below 1990 by 2017	15% below 2005 (5) 15% below 2006 (1) 27% below 2005 (1) 7% below 2005 (1) 15% below 2005 by 2035 (1)	15% below 2005 (1) 15-20% below 2005 (1)	10% below 2005 (1) 15% below 2008 (1) 20% below 2005 (1)	1000 (1) 2000 (1) 2008 (1) 2005 (1)	25% below 1990 (10)
Adaptation Strategies in CAPs	3/15 (3 out of possible 15)	3/4	5/7	0/0	1/1	6/9	1/3	0/3	0/2
Climate in Hazard Mitigation or General Plans **Partial list needs further research	Berkeley (HMP)**	Pinole (GP) Richmond (GP) San Pablo (GP)**	Marin County (GP) Mill Valley (GP)**	Napa County (HMP)**	City/County (HMP)**	County (GP)**	San Jose (GP) Santa Clara (HMP)**	County (GP) Vacaville (GP)**	Santa Rosa (GP)**
Climate Authority	NO	NO	NO	NO	NO	NO	NO	NO	Reg. Climate Protect. Auth.
Countywide Coordination	Alameda County Energy Council (JPA)	Contra Costa County Climate Leaders (np)	Marin Climate Energy Partnership (np)	NO	San Francisco Dept. of the Environment (gov)	Reg. Integrated Climate Planning Suite (gov)	SV 2.0 (gov) & JVS Climate TF (np)	RCPA (gov) & Climate Protection Campaign (np)	Solano

Part II: Adaptation to Climate Impacts





National

1. [**The President's Climate Action Plan**](#) (2013) includes the outline of a 13-point program to "prepare the United States for the impacts of climate change" that complements sections on reducing carbon pollution and taking international leadership. The impacts section briefly summarizes actions federal agencies are taking or will take to support community-based efforts to protect and strengthen infrastructure, human health and natural systems.
2. [**Executive Order 13653**](#) (June 2013) *Preparing the United States for the Impacts of Climate Change*: Directed federal agencies to support local, regional and state efforts on climate resilience, including:
 - Modernizing federal programs to support climate resilient investment
 - Managing land and waters for climate resilience
 - Providing information, data and tools for climate resilience efforts
 - Updating and submitting agency adaptation plans
 - Participating in the Interagency Task Force on Preparedness and Resilience

E.O. 13653 also established the [**State, Local and Tribal Leaders Task Force on Climate Preparedness and Resilience**](#). California members were Governor Jerry Brown, Sacramento Mayor Kevin Johnson, Los Angeles Mayor Eric Garcetti, and Santa Barbara County Supervisor Salud Carbajal.

In July 2014, President Obama announced a [**series of actions**](#) to support local communities' resilience efforts based on initial input from the Task Force including the \$1 Billion National Disaster Resilience Competition, advanced mapping and data tools, and new guidance for states to include climate impacts in hazard mitigation planning.

In November 2014, the Task Force presented [**35 recommendations**](#) organized around 7 themes to Vice President Biden and senior White House staff for how the federal government can support communities across the nation dealing with climate change impacts.

3. [**Interagency Climate Change Adaptation Task Force**](#): Established as part of Executive Order 13514 (2009). Interagency effort led by the Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA) and including representatives from more than 20 federal agencies.

The task force released an [October 2011 Progress Report](#) that outlines recommendations to President Obama for how federal policies and programs can better prepare the United States to respond to the impacts of climate change. The recommendations include making adaptation a standard part of agency planning and ensuring scientific information about the impacts of climate change is easily accessible.

In the last three years the Task Force and its members have produced a number of cross-sector reports:

- [Enhancing the Climate Resilience of America's Natural Resources](#).
- [A National Action Plan: Priorities for Managing Freshwater Resources in a Changing Climate](#).
- [National Fish, Wildlife and Plants Climate Adaptation Strategy](#)
- [National Ocean Policy Implementation Plan](#)

4. [Executive Order 13514](#) (2009) *Federal Leadership in Environmental, Energy and Economic Performance*: A section of 13514 required all federal agencies to create adaptation plans for their operations and topic areas. The [first set of twenty-six agency plans](#) was released in 2013. The plans evaluate the most significant climate change related risks to, and vulnerabilities in, agency operations and missions in both the short and long term, and outline actions that agencies will take to manage these risks and vulnerabilities.
5. [EPA Climate Adaptation Plan](#) (2014): Adaptation plan for key federal agency that has authority to regulate GHGs. Identifies ways in which climate change could affect the EPA's ability to fulfill its mission. In addition, the plan describes priority actions that the EPA will take to ensure that its programs, policies, rules, and operations will remain effective under future climatic conditions.
6. [U.S. Climate Resilience Toolkit](#) (2014): Produced by NOAA and a set of other federal agencies, the Toolkit provides scientific tools, information, and expertise. The site is designed to serve interested citizens, communities, businesses, resource managers, planners, and policy leaders at all levels of government. Version 1.0 focuses on two topics—coastal flood risk and food resilience. Sections on human health, water, energy and other topics will be added. 1.0 provides federal information and decision support resources, with state, local, academic and non-profit resources to be added in the near future.
7. [National Climate Assessment](#) (2014): Massive (840 pages) 2014 comprehensive report summarizes the impacts of climate change on the United States, now and in the future. Compiled by a team of more than 300 experts guided by a 60-member Federal Advisory Committee. Includes eight regional chapters focusing on specific issues for each geographic area.

8. [**FEMA DRAFT State Mitigation Plan Review Guide**](#) (2014): FEMA draft guidance (for external review) includes the need for states to consider climate change in their hazard mitigation plans. "Concepts under consideration include strengthening specific requirements for assessing future risk in light of a changing climate and changes in land use and development. This will ensure that the mitigation strategy addresses risks and takes into consideration possible future conditions in order to identify, prioritize, and implement actions to increase statewide resilience."

9. U.S. Peer-to-Peer Networks

There are now a number of national learning networks on climate adaptation providing training, information sharing, tools and more.

[**Climate Adaptation Knowledge Exchange \(CAKE\)**](#)

Extensive on-line "virtual library" including case studies, directory of key organizations, topic forums and tools. Founded in 2010 and managed by EcoAdapt.

[**National Adaptation Forum**](#)

1st biannual conference for 500+ held in Denver 2013 with second conference scheduled for St. Louis in May 2015. Includes trainings, presentations, networking and information exchange.

[**American Society of Adaptation Professionals \(ASAP\)**](#)

New professional organization for adaptation workers, providing affinity groups, research projects and other services.

[**Georgetown Climate Center**](#)

Leading resources for state and federal policy. A part of Georgetown Law in Washington D.C.

[**Urban Sustainability Directors Network \(USDN\)**](#) — Peer-to-peer network of 100+ sustainability experts from cities in U.S. and Canada.

[**Institute for Sustainable Communities Climate Resilience Workshop \(2014\)**](#) —

Climate adaptation collaboratives from 12 U.S. metro areas including SE Florida, NE Florida, Metro D.C., Metro Boston, New England, Twin Cities, Puget Sound, San Diego, Los Angeles, Bay Area, Sacramento, Sierra Nevada

[**Water Utilities Climate Alliance**](#) — Alliance of 10 leading water agencies on climate policy and action. Includes Southern California, Denver, Arizona, San Francisco, New York, Portland, Seattle, Nevada, Tampa Bay, and San Diego.

10. Selected City, Regional and State Adaptation Plans

[**A Stronger More Resilient New York \(2013\)**](#) — Major, post-Sandy report on strategies to address climate impacts in New York City.

[Chicago Climate Action Plan](#) (2007) – This five-sector plan includes Adaptation as Chapter 5.

[Southeast Florida Climate Change Compact](#) (2009) 4-county agreement and working platform to address sea level rise, water supply and other impacts in the Miami metro area. Includes [A Region Responds to a Changing Climate](#), presents more than 100 strategies to address climate impacts in SE Florida.

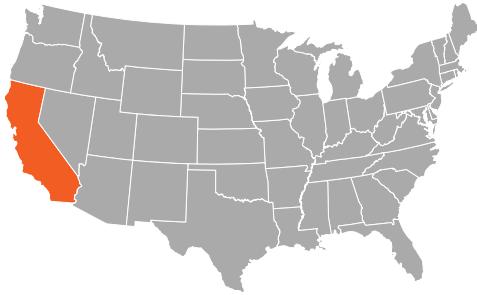
[Baltimore Disaster Preparedness and Planning Project: A Combined All Hazards Mitigation and Climate Adaptation Plan](#) (2013) – DP3 initiative by the Planning Department to integrate climate adaptation planning with existing hazard mitigation planning.

[Boston Climate Action Plan: Adaptation](#) (2010) – Boston planning for climate impacts. Includes post-Sandy [Climate Ready Boston: Municipal Vulnerability to Climate Change](#).

[Sustainable DC](#) (2012) – 20-year plan to “make the District the healthiest, greenest and most livable city in the nation.”

[Building a Climate Resilient National Capital Region](#) (2014) – Metropolitan Washington Council of Governments’ project to identify and address climate impacts in the D.C. region.

[King County-Cities Climate Collaboration](#) (2007) – Initiative of eleven cities and King County to address climate impacts in the greater Seattle region.



California

1. [**Executive Order B-30-15**](#) (2015) — Governor Brown's April 2015 call for a 40% reduction in GHGs by 2030 also includes a series of orders for state agencies to address climate impacts and adaptation planning.
2. [**Safeguarding California**](#) (2014) — Produced by Resources Agency, the 344-page update to 2009 [**Climate Adaptation Strategy**](#) provides info on risk in 9 sectors, outlines progress to-date, and provides guidance to state policy makers.
3. [**Our Changing Climate**](#) (2012) — 16-page summary document on research from the Third Assessment on vulnerability and adaptation in California.
4. [**Indicators of Climate Change in California**](#) (2013) 250-page report by Cal-EPA showing the latest statewide data on 40+ climate indicators for impacts from sea level rise, water, heat, etc.
5. [**Executive Order S-13-08**](#) (2008) — Calls on state agencies to create sea level rise assessment and a climate adaptation strategy
6. [**California Third Assessment**](#) (2012) — 37 peer-reviewed research reports from the California Climate Center on climate impacts, including 10 focused on the Bay Area.
7. [**California Fourth Assessment**](#) (in planning stage) — Two sets of proposed research studies on energy (CEC funding) and non-energy issues (Resources Agency funding). Resources Agency is expected to release an RFP for specific studies in early 2015.
8. [**California Climate Research Plan**](#) (2014) — 68-page plan produced by 16 state agencies — first California plan to set out climate research priorities.
9. [**Cal-Adapt**](#) — State-operated on-line tools, data, and resources to help local planners understand risks to their specific geographic areas—sea level rise, temperature, precipitation, snowpack, and wildfire
10. [**Adaptation Planning Guide**](#) (2013) — Produced by Resources Agency and Cal-EMA, four complementary documents providing a step-by-step planning guide for local governments, information on specific impacts in seven CA zones, and help with devising adaptation strategies.

11. [California Multi-Hazard Mitigation Plan](#) (2013) — Plan and guidance for local governments includes climate change section for first time. Plan addresses coastal flooding, energy shortages, drought, air pollution, severe storms, insect pest diseases, and more.
12. [California Local Energy Assurance Planning](#) (CaLEAP) — State program to assist local governments to become more resilient during energy disruptions; ensuring energy supply (e.g., electricity, natural gas, liquid fuels) to "key assets" through the identification of actionable projects. "Key assets" is to ensure functionality of essential services to protect safety and public health.
13. [MyPlan: California Hazard Mitigation Mapping](#) — Cal EMA's map service is a simple interface to California's natural hazard data products. Allows users to easily make hazard maps for mitigation planning, report generation, and other tasks.
14. [MyHazards](#) — CalEMA tool to help individuals identify natural hazards in their area and to learn how to reduce risks.
15. [Strategic Growth Council Cap and Trade Project Guidelines](#) (2015) — January 2015 guidelines for \$130 million Affordable Housing and Sustainable Community (AHSC) section of cap-and-trade program require applicants to show how their projects will address climate impacts.
16. [Integrating Public Health Into Climate Action Planning](#) (2012)
[Preparing California for Extreme Heat: Guidance & Recommendations](#) (2013)
[Contingency Plan for Heat Emergencies in California](#) (2014)
Three substantial, action-focused reports from the California Department of Public Health, California Emergency Management Services and their partners to push public health issues into local adaptation/resilience planning by providing planners with data, narratives, solutions and more.
17. [State of California Sea Level Rise Guidance](#) (2013) — State Ocean Protection Council guidance for state agencies and others to address sea level rise in state and local planning. Guidance is based on the latest official science report [Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present and Future](#) (2012) produced by the National Research Council.
18. [Addressing Climate Adaptation in Regional Transportation Plans](#) (2013) Caltrans guidance for MPOs and RTPAs on a range of climate impacts. Provides a basic and an advanced approach to adaptation planning for transportation infrastructure.
19. [Caltrans Activities to Address Climate Change](#) (2013) — Report details Caltrans' work to reduce GHGs in its own operations and program as well as efforts to prepare the transportation system for climate impacts.

20. [Guidance for Incorporating Sea Level Rise](#) (2011) — Caltrans document requiring attention to sea level rise in the Project Initiation Document process.
21. [Governing California Through Climate Change](#) (2014) — Little Hoover Commission report to the Legislature on governance and financing challenges for sea level rise in California + 5 recommendations for action.
22. [The Climate Gap: Inequalities in How Climate Change Hurts Americans and How to Close the Gap](#) (2009) — Report by UC/USC experts on health and economic consequences of climate change for vulnerable populations in CA and strategies to address these gaps.
23. California Peer-to-Peer Networking

[Alliance of Regional Collaboratives for Climate Adaptation](#) (ARCCA)

Networking and best practices among San Diego, Los Angeles, Bay Area, Sacramento, and Sierra climate collaboratives. In addition, ARCCA works closely with the Governor's Office of Planning and Research to link to and influence state agency efforts.

[California Adaptation Forum](#) — 2014 forum brought together 800+ climate stakeholders from across the state. LGC and other conference planners expect to hold CAF in even numbered years with similar national forum in odd years.

24. California Adaptation Legislation

California has not developed overall adaptation legislation like the state has for GHG emissions, but a set of single-approach bills were adopted in 2014 and at least four new bills have been introduced in early 2015.

[SB 379 \(Jackson\)](#)

Would require city and county general plans to address climate adaptation and resiliency.

[SB 246 \(Wieckowski\)](#)

Would expand the Climate Action Team's authority, under Cal-EPA, to include coordination of the state's climate adaptation activities.

[AB 1482 \(Gordon\)](#)

Would expand the Resources Agency's authority for coordination of the state's climate adaptation efforts.

[SB 317 \(De Leon\)](#)

Would create a multi-billion dollar bond act to support parks, rivers, coastal protection, and [climate resilience planning and implementation](#).

SB 1066 (Lieu) APPROVED

Gives Coastal Conservancy authority to fund and undertake sea level rise projects.

AB 2516 (Gordon) APPROVED

Requires Resources Agency and OPC to develop Planning for Sea Level Rise Database annually summarizing steps being taken statewide to plan for sea level rise.

SB-X7 (2009) APPROVED

Requires urban water agencies to reduce per capita use by 20% by 2020.

California 2014 Groundwater Legislation (2014) APPROVED

Package of three approved bills that establish local groundwater sustainability agencies and plans statewide—first time rules for California groundwater

AB 691 APPROVED

Requires 80 local governments in California that are trustees of public trust lands to prepare a report by 2019 on how they are addressing sea level rise for their areas.

SB 1217 (Leno) – DID NOT PASS 2014

Would have required Resources Agency to conduct climate risk assessment and to update Safeguarding California plan. Also would have directed OPR to create infrastructure resilience guidelines and SGC to report climate change findings to agencies for capital planning.

SB 1184 (Hancock) – DID NOT PASS 2014

Would have given BCDC authority (and eventually funding) to work with partners on Bay Area resilience strategy for sea level rise.

25. City and Regional Plans/Reports (selected examples)

[San Diego, 2050 Is Coming. How Will We Answer?](#)

[Integrated Strategies for a Vibrant and Sustainable Fresno County](#)

[C-Change.LA – Temperature, Snowpack, Precipitation and Sea Level Rise](#)



Bay Area — Regional Projects

ABAG Regional Disaster Resilience Initiative — Region-wide initiative to develop a process through which stakeholders in the Bay Area can build resilience through collaborative planning for recovery. The initiative identified sector-specific recovery issues that benefit from multi-jurisdictional coordination and collaboration and identify actions needed to improve this capacity. The Resilience Initiative process included four stakeholder-driven workshops, a survey, and interviews with key regional resilience stakeholders and elected officials. The initiative culminated with four targeted policy papers and an Action Plan to guide future work in the region to build resilience to major disasters.

Adapting to Rising Tides Program — The San Francisco Bay Conservation and Development Commission (BCDC) and its partners are now adapting ART for projects in other Bay Area counties. The ART pilot project was a collaborative planning effort, focused on a portion of the Alameda County shoreline, from Emeryville to Union City, to understand how Bay Area communities can adapt to sea level rise and storm event flooding. Led by BCDC and the NOAA Coastal Services Center, the ART Project has engaged local, regional, state and federal agencies, as well as non-profit and private stakeholders, in an in-depth exploration of the issues.

Alliance for Climate Resilience — Currently under development by a group of Bay Area stakeholders representing non-profits, philanthropy, public agencies and businesses. The goal of the ACR is to serve as a coordinating body to support climate efforts across the Bay Area. A particular focus will be on building resiliency in vulnerable communities. The ACR will also work to build a bridge between the Bay Area and resiliency programs at the state level.

Bay Area Ecosystems Climate Change Consortium (BAECCC) — BAECCC assesses the impacts of climate change on Bay Area ecosystems and identifies management actions to address those impacts. A great model for the region, BAECCC fosters collaboration among natural resource managers, scientists, and others interested in climate change and the future of the San Francisco Bay Area through three elements— communication & coordination, strategic science, and management applications.

Bay Area Integrated Regional Water Management Plan — IRWMP was developed through a collaboration of Bay Area water agencies. The plan outlines the region's water resources management needs and objectives and presents strategies to help achieve water management goals. The new plan includes a major section on climate change.

Bay Area Regional Desalination Project — BARDP evaluated feasibility of building a desalination treatment facility at the Mallard Slough Pump Station in eastern Contra Costa County. The plant would turn brackish water into a suitable water supply. Once treated, water could be delivered through either EBMUD or Contra Costa Water District's systems or "traded" through water transfer agreements. Five of the Bay Area's largest water agencies worked together to investigate how this regional project could serve the needs of over 5.6 million residents and businesses in the region. The study concluded that the project is technically feasible.

Bay Area Regional Health Inequities Initiative (BARHII) — Unique undertaking by local health departments in the San Francisco Bay Area to confront health inequities. The regional collaboration includes public health directors, health officers, senior managers and staff from 10 Bay Area counties. BARHII has recently produced health and climate change fact sheets. BARHII focused considerable attention on SB 375 planning for Bay Area. Includes public health directors, health officers, senior managers and staff from all nine counties.

Bay Area Resilient Communities Initiative — RCI is a coalition of community-based organizations that are creating a national model of resilience planning led by the communities most impacted by climate change and natural disasters for the benefit of all residents. RCI's core capacities include:

- Leading collaborative development of policy and programs
- Assessing resilience vulnerability and assets
- Conducting effective multilingual community engagement
- Managing project implementation
- Evaluating programs and policies with a social equity perspective

Baylands Ecosystems Habitat Goals Project (1999) — The Baylands Goals Project, completed in 1999 by a consortium of public agencies, focused on goals for the historic tidelands that ring the Bay. The successful and ongoing implementation of the Baylands Goals served as a model for the Open Space Council to undertake a similar project for upland habitats beyond the Bay's edge.

Bay Subtidal Habitat Goals Project (2011) — The Subtidal Habitat Goals Project is a collaborative, regional planning effort to advance the understanding and future science-based protection and restoration of submerged habitats in San Francisco Bay. Along with the Baylands Goals, the Subtidal and Upland Habitat Goals projects cover the entire Bay Area with habitat conservation plans.

Cal-BRACE (Building Resilience Against Climate Effects) — California Department of Public Health (CDPH) four-year project, funded by the Centers for Disease Control and Prevention (CDC). California will apply the CDC BRACE model (Building Resilience Against Climate Effects) to targeted counties. The model includes five steps to help state health departments develop a comprehensive climate and health adaptation plan:

- Forecast climate impacts and assess vulnerabilities in various areas of the state

- Project the disease burdens from those impacts
- Assess public health strategies to protect health and communities
- Work with local health departments to help their communities develop climate and health adaptation plans
- Evaluate the impacts and quality of project activities

Climate Readiness Institute — Created in 2014 to bring together academic experts from Berkeley, the Berkeley Lab, Stanford, and Davis with practitioners from government, business, and the non-profit sector to tackle the most important Bay Area climate challenges. The specific mission is to develop, in partnership with concerned policy makers and business leaders, the cutting-edge climate science, adaptation strategies, and mitigation tools needed to ensure a resilient, low carbon Bay Area and beyond. The CRI is addressing four topic areas: Flooding (sea level rise, storms, king tides), water supply, climate impacts on natural systems, and greenhouse gas emissions reduction. Each of these topic areas will be examined through the lenses of equity, governance, and the economy.

Conservation Lands Network — Five-year science-based study (2006-2011) of 4.3 million acres and over 1,000 plant and animal targets by over 125 organizations and individuals. The study aimed to identify the most essential Bay Area lands needed to sustain biological diversity. It was designed to recommend the types, amounts and distribution of conservation lands as well as actions needed to sustain diverse and healthy communities of plant, fish and wildlife resources in the nine counties. The new **CLN 1.0 Progress Report**, completed earlier this year (2014), highlights the achievements made since the 2011 release of the CLN 1.0 report. Progress is tracked through four conservation indicators and fourteen progress metrics.

Our Coast, Our Future — Major project, led by Gulf of the Farallones NMS, PRBO and USGS, providing Bay Area natural resource managers, local governments and others with new, and much-improved decision-support tools to help Bay Area communities understand, visualize, and anticipate local coastal climate change impacts. The OCOF tool now covers the entire interior of San Francisco Bay plus the outer coast from Sonoma to San Mateo counties.

PG&E — PG&E is doing substantial work to address energy assurance and climate change impacts—including heat, reduced snowpack, changes in rainfall patterns, extreme storm events, and sea level rise—that combined with projected increases in electricity demand in a hotter climate will significantly affect its operations. Since 2008, PG&E has maintained a cross-functional team to explore and communicate climate-related risks within the company.

Rockefeller 100 Resilient Cities Challenge — Three Bay Area cities were winners in the 100 Resilient Cities Challenge—Berkeley, Oakland and San Francisco. The awardees are working individually and collaboratively to develop resiliency strategies for climate impacts, earthquakes and other issues, and are expanding current efforts to engage community members in resiliency planning. Although each of these three

Bay Area cities will develop its own comprehensive resiliency strategy, they will do so in the context of regional collaboration and cooperation to capitalize on common opportunities, challenges and benefits. The new funding enables each city to hire a Chief Resiliency Officer (CRO) – an executive level staff member who will lead their city's efforts and will coordinate with other Bay Area CROs.

Resilient Shorelines Program — Coordinated through the Resilient Shorelines Partnership—BCDC, ABAG and the Coastal Conservancy—the project will identify shoreline risks from sea level rise, storms, and earthquakes, develop local and regional strategies, identify how to integrate strategies, develop share regional data and functions, and identify how to finance key actions.

San Francisco Bay Regional CHARG — Sponsored by the Federal Emergency Management Agency (FEMA), the Coastal Hazards Adaptation Resiliency Group brings together more than 100 Bay Area stakeholders around the flood impacts of sea level rise. The draft goals of this group are to improve regional coordination among federal, state, local, private and NGOs; identify and work together to solve regional flood management issues; exchange ideas and transfer technical knowledge and expertise; speak as one unified voice in developing policy; and develop local, state and federal financing and funding strategies.

Surviving the Storm— A 104-page study, completed in April 2015, to analyze the physical and economic vulnerability of the Bay Area to a likely extreme weather event. The study looks in-depth at the economic impact questions about an extreme storm event. California's climate is famously volatile, with winters of devastating floods separated by years of remorseless drought. Following recent extreme storm events on the Atlantic and Gulf coasts, what are the potential economic impacts of an extreme storm event in the Bay Area? What regions would be hardest hit? What can be done to improve regional defenses?

Part III: Opportunities



What do these federal, state and regional climate efforts mean for Bay Area cities and counties? The ramping-up of climate policies and programs at the federal, state and regional levels presents some substantial near- and longer-term opportunities for local stakeholders that will help to accelerate local climate action.

GHGs

1. Governor's Brown's recent actions—the Executive Order calling for a 40% reduction in GHGs by 2030, and the State of the State address calling for new and tougher California goals for transportation, buildings, and electricity generation—should provide a boost for stronger local action in these sectors. Similarly, if the legislature passes SB 32, the 80% by 2050 goal will become law in California (with interim goals for 2030 and 2040), a move that will have deep ramifications for all levels of climate action.

In general, the increase in *public* statements and actions on climate change by federal, state and regional leaders will help build greater local public and political support for climate action in the near-term. As climate change comes back to Page One, as it has lately, local leaders who have been on the fence will begin to make climate action a higher priority. Climate advocates should be ready to take advantage of that opportunity.

2. In AB 32's Scoping Plan II, California's Air Resources Board has exhibited a greater understanding that reaching the state's climate goals will require real contributions from local and regional efforts. While the state will continue to take the lead on GHGs and can mandate large-scale actions, there are important support roles for local governments to play on building energy, low-emission vehicles, water conservation, energy generation and other topics.

We need to develop a truly aligned and integrated state/region/local approach with each entity playing specific roles that complement one another. The key for Bay Area cities and counties will be to identify and focus laser-like on those GHG strategies where locals can really deliver significant results. Playing at the margins with "feel good" strategies will not attract ARB and the other state agencies to create a true partnership with cities and counties.

An existing example of this is the state legislature's passage of AB 117 that allowed local governments to form "community choice aggregation" agencies for electricity generation, followed by Marin's difficult but ultimately successful campaign to create Marin Clean Energy. MCE's success has helped to inspire the development of Sonoma Clean Power and major studies of CCA's in San Mateo and Alameda counties.

3. The Bay Area Air Quality Management District's push to develop a Regional Climate Protection Strategy, the first of its kind in California, presents a tremendous opportunity for cities and counties. While large cities (San Jose,

San Francisco, and perhaps Oakland in the Bay Area) have reasonable resources to implement their climate action plans, most cities are resource-poor and can best participate as part of a countywide or regional GHG program. Smaller cities should partner with their counties under the BAAQMD regional strategy to demonstrate that collectively they can produce concrete and measurable results to help the region to eventually meet the 2050 goal.

4. The development of Plan Bay Area, the region's first SB 375-mandated Sustainable Community Strategy, was a difficult but ultimately successful process in the region. The work to develop the second SCS will start in the next year and provides a set of opportunities for local climate efforts. First, pro-PBA advocates could build a more positive community response to PBA that would enable more sustainable growth in each county and build a better partnership with MTC and ABAG. Second, by advancing local development under PBA, cities would qualify for more funding from the relatively affluent One Bay Area Grant Program. Third, cities and counties could collectively advocate for PBA II to take a broader approach to meeting the transportation GHG targets by including local efforts for low emission vehicles and other non-land use strategies.
5. The new federal regulations on passenger vehicles and California's clean vehicle standards together will help car-oriented Bay Area counties to finally make some progress on transportation, the largest GHG sector, and provide a new opportunity for local action. In slow-growing counties, changing transportation behavior has been a difficult process because the historical land use pattern favors or requires car travel. (Transit ridership per capita is actually down in the Bay Area over the last decade despite a substantial expansion of transit, bike and walk facilities.) Now, however, the new and much stronger vehicle regulations over the next decade (to 55 MPG) clearly open the door for forward-thinking regional and local leaders to add incentives and support programs to significantly accelerate the shift to high MPG vehicles in their communities.
6. The federal government's focus areas for GHGs—power plants, vehicles and renewable energy—together with the Republican-dominated Congress, likely means no major federal funding in the near-term for California's climate efforts. This will require much more creative and innovative solutions to climate finance by local, state and regional leaders if we are to advance at the speed and scale required. An excellent current example is Berkeley First, the residential/commercial energy program developed by the City of Berkeley, now spread nationally as Property Assessed Clean Energy (PACE). The lack of public funding will also require a much greater reliance on private sector mechanisms and public/private partnerships.
7. California's Cap and Trade Program is beginning to open the door to billions in state climate funding. This new funding provides a major opportunity for cities and counties to finance local GHG reduction programs, particularly if they work collectively. Cap and Trade will be a highly competitive process, but local entities

that nominate projects that create much "bang for the buck" will increase their odds of winning and getting the opportunity to prove the worth of local efforts.

8. With public awareness growing on the need for action on both climate change and socio-economic inequality, local governments and their partners have an important opportunity to bring together a broad range of people and civic organizations to address both issues simultaneously. By joining forces, a more powerful coalition could be built to advance climate and equity in California. Which GHG strategies will also build social equity? Which strategies will actually increase damage to low-income communities if they are implemented?

Adaptation to Climate Impacts

1. California's climate efforts, under both Governor Brown and Governor Schwarzenegger have focused appropriately on GHGs. The initial results of these efforts, with much promise for the future, have been produced through a series of GHG mandates and regulations. On the other hand, very limited state resources have been devoted climate adaptation and there are NO significant requirements for adaptation planning or implementation. Nearly all of the adaptation efforts underway in the Bay Area and California are through the voluntary actions of their sponsors.

The opportunity for local governments is twofold. First, climate adaptation advocates could work with others statewide to pass legislation to require adaptation planning (through an existing or new process) and provide new state funding for addressing climate impacts. Many believe that this is the only way that real adaptation planning will happen in the timeframe required. Legislation has been introduced in 2015 in Sacramento that would begin to edge the state towards this approach, but the bills are still largely focused on state agency coordination, not regional and local planning. (Some are simple spot bills that could take on a stronger approach over the next year.)

Second, cities could begin working together now to develop a coordinated county-level planning process, get ahead of any state mandates or funding requirements, and be first in line to access new funding that may become available.

2. FEMA and related federal agencies are expressing a strong interest in using the hazard mitigation planning process for climate adaptation. This existing federal/state/local process already helps and rewards communities who prepare for earthquakes, floods, fires and other disasters. Climate change will significantly exacerbate a number of these hazards. One opportunity for local governments with this approach is that there are currently more federal funds available for hazard mitigation planning than for climate adaptation. For this reason alone, cities should look carefully at how to adapt the hazard approach for sea level rise and other climate impacts.

ABAG's new Regional Resilience Program offers a significant opportunity for climate adaptation, related to the FEMA work. ABAG staff have begun providing technical assistance to Bay Area cities to advise them on how to fold climate change into their hazard mitigation plans. This is not a perfectly aligned process, but a group of cities, by demonstrating countywide interest, could attract more attention and assistance from ABAG.

3. While the federal government has been slow to cutting GHGs, the White House and the range of federal agencies have taken a number of recent actions on adaptation. This has been an easier sell post-Sandy or post-Katrina, and with much of the nation undergoing new and more extreme weather events. Still, it is hard to determine what the federal response—including agency adaptation plans, an on-line toolkit for states/cities, the huge National Climate Assessment, and a two high-level task forces—means for the Bay Area. While one of the task forces included state and city representation (4 from California) the federal effort still appears largely centered on federal agencies, not on states, regions and cities where adaptation planning must occur.
4. Since there are a number of high-quality adaptation projects underway in the Bay Area and other California urban areas, there are excellent opportunities for local governments to learn from these adaptation pioneers. The problem is there are limited ways for government staff and other stakeholders to easily learn from their counterparts elsewhere. It is simply overwhelming to keep up and to sort through all the efforts to find what is valuable.

The Joint Policy Committee's Bay Area Climate & Energy Resilience Project (BACERP) provided local stakeholders with networking and information through workshops, webinars, and project inventories over the last two years. (The project ended its work on March 31, 2015.) The new Alliance for Climate Resilience (currently under development), the Climate Readiness Institute (Berkeley, Berkeley Lab, Stanford and Davis working with Bay Area practitioners), ABAG's Resilience Program, the Resilient Communities Initiative, BCDC's Help Desk and other Bay Area efforts can all provide various types of assistance to local governments. It would benefit local governments to work together to make sure that this type of networking and info sharing is organized and institutionalized *across the region* to help all local stakeholders save time and precious resources as they develop their projects.