



Learning from State Action on Climate Change

May 2008 Update

While U.S. federal policy on climate change has not been forthcoming, states have taken the lead on developing climate policies and initiatives. States are setting emission reduction targets, mandating investment in renewables and energy efficiency, developing plans to mitigate climate change, and designing greenhouse gas cap and trade programs. State governments cite a variety of reasons for action, including promoting economic development, reducing vulnerability to fluctuating energy prices, and preventing damages to the states' resources from climate change.

In the absence of federal leadership to reduce greenhouse gas (GHG) emissions, many U.S. states and regions have begun taking actions to address the issue of climate change. States, for a variety of motives, have taken a broad range of actions that reduce greenhouse gases. While confronting the challenge of climate change will require a national and international regime, the states and regions have a valuable role to play.

States often function as “policy laboratories,” developing initiatives that serve as models for federal action. This has been especially true with environmental regulation—most federal environmental laws have been based on state models. In addition, state actions can have a significant impact on emissions, because many individual states emit high levels of greenhouse gases. Texas, for example, emits more than France, while California's emissions exceed those of Brazil. State actions are also important because states have primary jurisdiction over many areas—such as electric generation, agriculture, and land use—that are critical to addressing climate change.

It is important to understand that states have limited resources to devote to the climate issue, and their strict budget requirements can put long-term climate policies in jeopardy. States also lack certain powers that would be crucial to a comprehensive climate change policy, such as the

authority to enter into international agreements. Finally, when states take individual approaches to an issue, a “patchwork quilt” of policies can result across the nation. This patchwork of policies may be inefficient for complying businesses and may result in some states duplicating the work done in other states. While some states are delivering real reductions of GHG emissions, only in a few cases are the reductions commensurate with what will be needed on a global scale.

Ultimately, climate change is a global problem that will demand global action, including national action in the United States. State and regional action cannot substitute for a coordinated national response, but it can help provide the foundation for that response.

Motivation for Action

States that enact climate change policy almost always do so with long-term economic well being in mind. Many states are concerned with the toll climate change is projected to take on their economies, many of which are closely tied to their natural resources. Coastal states consider the impact of rising sea levels, agricultural states worry about lost productivity, and the dry Western states are alarmed by the prospect of worsening droughts. Many states, however, are looking at policies that address climate change as economic opportunities: to produce and sell alternative fuels, to become renewable energy exporters, to attract high-tech business, or to sell carbon emission reduction credits. Some states will be better able to take advantage of these opportunities than others, and many are concerned about the economic impacts of climate policy.

But economic development is just one motivator. In fact, multiple drivers lead to state policies that address climate change. Efforts to improve air quality, lessen traffic congestion, secure energy supply and reliability, or even to reduce odors from livestock feedlots often indirectly result in GHG reductions. Likewise policies designed explicitly to reduce GHG emissions often bring about benefits in these other areas.

In part because reducing GHG emissions can deliver multiple benefits, it has often been possible to build broad coalitions around GHG reduction policies. Climate change has, in fact, often been a bipartisan issue in the states, with Democratic, Republican, and Independent governors signing climate change legislation. Even when governorships have changed hands, policies have remained in place. Policymakers at the national level may be able to learn from the states how to find common ground on this issue.

Regional Initiatives

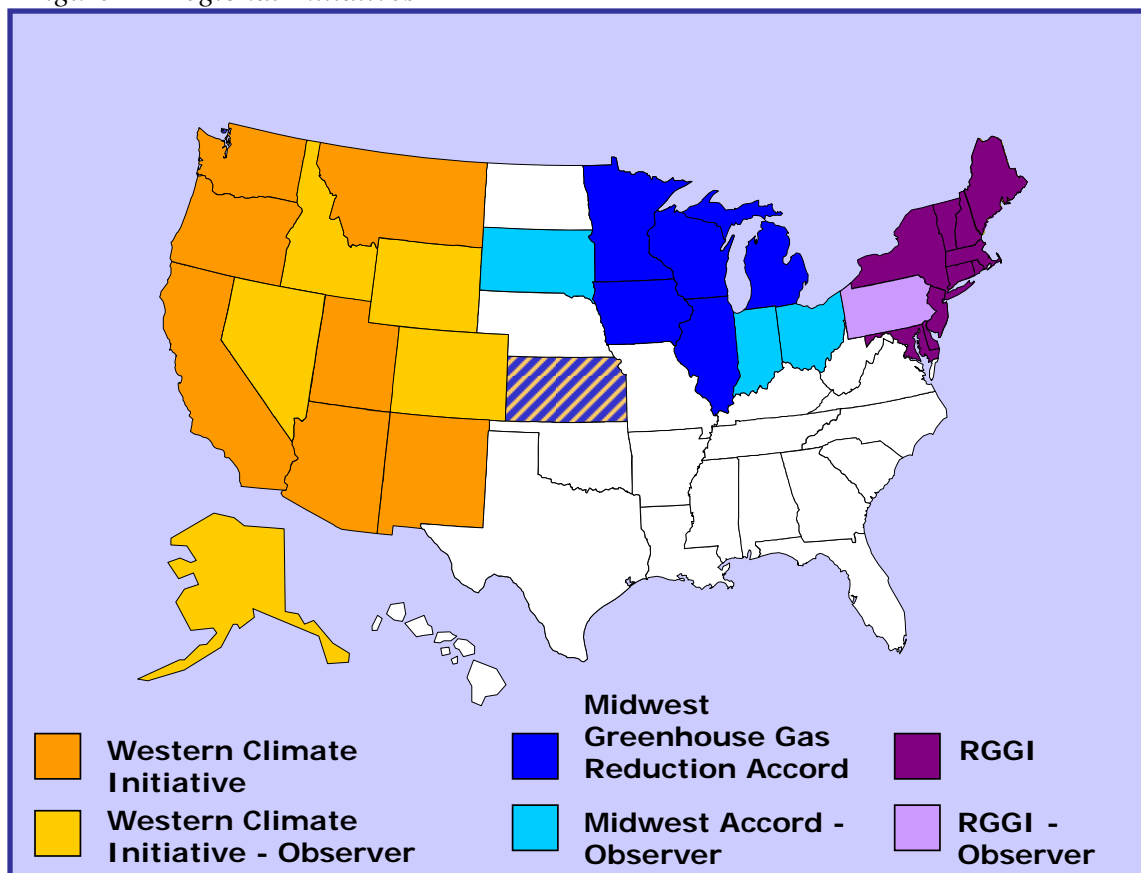
Regional programs can be more efficient than programs at the individual state level, as they encompass a broader geographic area, eliminate duplication of work, and create more uniform regulatory environments. Regional initiatives across the U.S. are addressing climate change and clean energy (see Figure 1). As of mid-2008, a total of 23 states are participating in the design of three separate regional cap-and-trade systems to reduce greenhouse gas emissions.

On November 15, 2007, six states and one Canadian Province established the Midwestern Regional Greenhouse Gas Reduction Accord. Under the Accord, members agree to establish regional greenhouse gas reduction targets, including a long-term target of 60 to 80 percent below current emissions levels, and develop a multi-sector cap-and-trade system to help meet the targets. Participants will also establish a greenhouse gas emissions reductions tracking system and implement other policies, such as low-carbon fuel standards, to aid in reducing emissions. The Governors of Illinois, Iowa, Kansas, Michigan, Minnesota, and Wisconsin, as well as the Premier of the Canadian Province of Manitoba, signed the Accord as full participants; the Governors of Indiana, Ohio, and South Dakota joined the agreement as observers. The Accord represents the first Midwestern regional agreement among U.S. states to collectively reduce greenhouse gas emissions, and will be fully implemented within 30 months.

In February 2007, Governors Janet Napolitano of Arizona, Arnold Schwarzenegger of California, Bill Richardson of New Mexico, Ted Kulongoski of Oregon, and Christine Gregoire of Washington signed an agreement establishing the Western Climate Initiative, a joint effort to reduce greenhouse gas emissions and address climate change. In the spring of 2007, Utah and the Canadian Provinces of British Columbia and Manitoba joined the agreement. In November, 2007, Montana joined, and the Canadian province of Quebec joined in mid-2008. Under the agreement, the WCI states and provinces jointly set a regional emissions target of a 15 percent reduction below 2005 levels by 2020, and by August 2008 the members will design a market-based system to aid in meeting the target. The states will also set up an emissions registry and tracking system. The initiative builds on work already undertaken individually by the participating states, each of which has already set its own emissions reductions goals, as well as two existing regional agreements (see below): the Southwest Climate Change Initiative of 2006, which includes Arizona and New Mexico, and the West Coast Governors' Global Warming Initiative of 2003, which includes California, Oregon, and Washington.

Ten Northeastern and Mid-Atlantic states have agreed to the Regional Greenhouse Gas Initiative (RGGI), the first cap-and-trade system in the nation to cover carbon dioxide (CO₂) emissions from regional power plants. RGGI sets a cap on emissions of carbon dioxide from power plants, and allows sources to trade emissions allowances. The program will begin by capping emissions at current levels in 2009, and then reducing emissions 10 percent by 2019. In December 2005, the governors of seven of the states signed a Memorandum of Understanding agreeing to adopt the program. Maryland joined RGGI in mid-2007, and Massachusetts and Rhode Island joined in January 2007. To facilitate compliance with reduction targets, RGGI will provide flexibility mechanisms that include credits for emissions reductions achieved outside of the electricity sector. The successful implementation of RGGI is an interesting model for federal policy makers. It will also set the stage for other states to join or form their own regional cap and trade systems and may encourage the program to expand to other greenhouse gases and other sectors.

Figure 1—Regional Initiatives



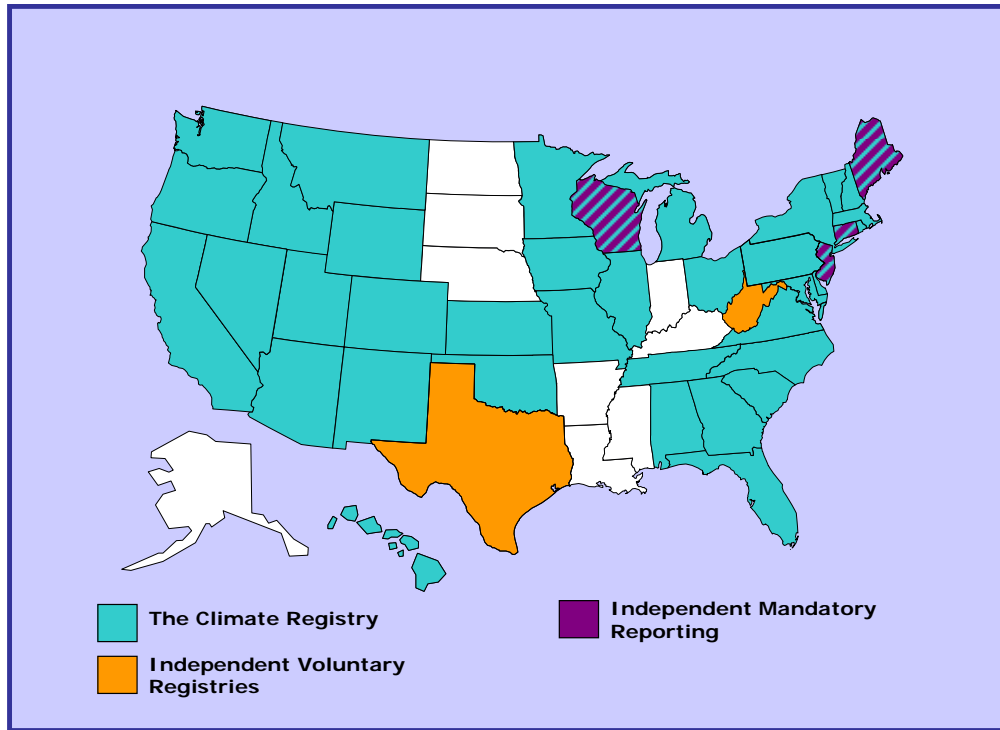
The Western Governors' Association (WGA) Clean and Diversified Energy Initiative, including 18 western states, investigated strategies to increase efficiency and renewable energy sources in their electricity systems. To meet its goals, the Initiative's advisory committee (CDEAC)

appointed eight technical task forces to develop recommendations based on reviews of specific clean energy and efficiency options. In mid-2006, the CDEAC made recommendations to the Western Governors' Association that include strategies to increase energy efficiency, expand the use of renewable sources in the region, and incentivize carbon capture and sequestration technologies. Additionally, the WGA and the California Energy Commission are creating the Western Renewable Energy Generation Information System (WREGIS). WREGIS is a voluntary system for renewable energy credits that tracks renewable energy credits (RECs) across 11 western states in order to facilitate trading to meet renewable energy portfolio standards.

In 2001 six New England states committed to the New England Governors and Eastern Canadian Premiers (NEG-ECP) climate action plan, including short- and long-term GHG emission reduction goals. Powering the Plains, launched in 2002, is a regional effort involving participants from the Dakotas, Minnesota, Iowa, Wisconsin and the Canadian Province of Manitoba. This initiative aims to develop strategies, policies, and demonstration projects for alternative energy sources and technology and climate-friendly agricultural development.

On May 8, 2007, more than 30 states signed on as charter members of The Climate Registry, a collaboration aimed at developing a common system for entities to report greenhouse gas emissions. As of May 2008, the Registry has 39 members. The Registry will serve as a tool to measure, track, verify and publicly report greenhouse gas emissions consistently and transparently between states. Voluntary, market-based and regulatory greenhouse gas emissions reporting programs are all supported under the Registry. In addition to the states shown in the map below, the Campo Kumeyayy Nation and the Canadian provinces of British Columbia and Manitoba have also joined the Registry. This collaboration is the largest national effort to date to track greenhouse gas emissions.

Figure 2: GHG Reporting and Registry Programs



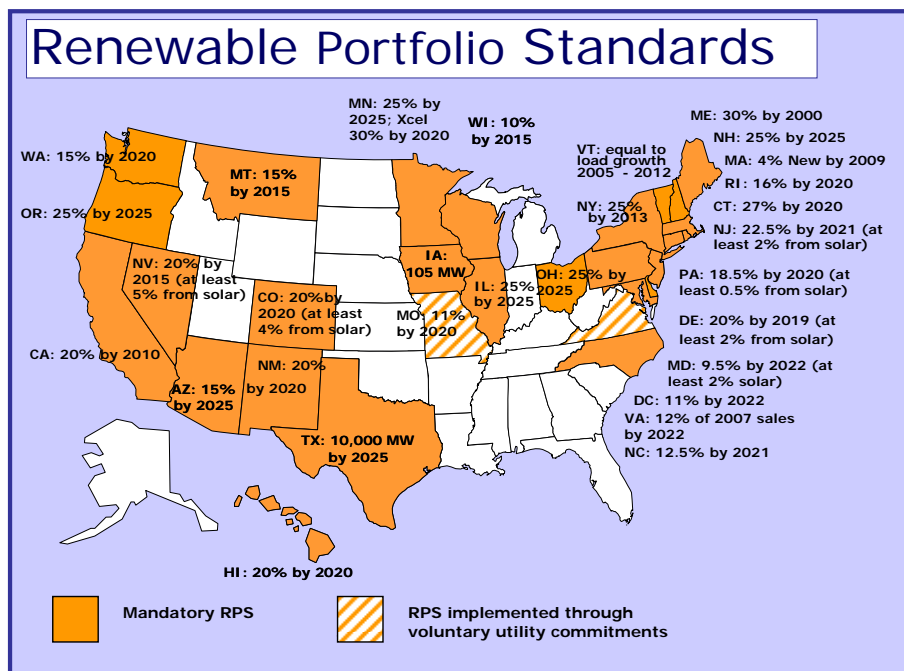
Many of the regional initiatives in the U.S. center around cap and trade systems to reduce greenhouse gas emissions. On October 29, 2007, a number of governments from around the world who have or are in the process of designing cap and trade systems announced the formation of the International Carbon Action Partnership (ICAP). The Partnership will provide a forum for members to share experiences, research, and best practices on the design of trading schemes. This will help the different trading systems develop in a compatible manner to facilitate the transition to a potential global carbon market in the future. The 10 U.S. state members are Arizona, California, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, and Washington. The other members of ICAP are nine European Union countries, the European Commission, two Canadian provinces, New Zealand and Norway.

Low-Carbon Electricity Policies

The generation of electricity accounts for approximately 38 percent of all carbon dioxide emissions in the United States. States have considerable authority over the production of electricity within their borders, and many options are available to them to promote low-carbon energy production.

Twenty-seven states and the District of Columbia have mandated that electric utilities generate a specified amount of electricity from renewable sources (see Figure 3). Most of these requirements take the form of “renewable portfolio standards,” or RPSs, which require a certain percentage or amount of a utility’s power plant capacity or generation to come from renewable sources by a given date. The standards range from modest to ambitious, and definitions of renewable energy vary. While the use of renewable energy does deliver significant GHG reductions, climate change is only one of several motivations behind these standards. Other advantages include job creation potential, energy security, and improved air quality. Most recently, Ohio became the 27th state to adopt a renewable electricity standard, mandating that by 2025, at least 25 percent of all electricity sold in the state come from alternative energy resources. At least half of the standard, or 12.5 percent of electricity sold, must be generated by renewable sources such as wind, solar (which must account for at least 0.5 percent of electricity use by 2025), hydropower, geothermal, or biomass. At least half of this renewable energy must be generated in-state. In addition to renewables, the additional 12.5 percent of the overall 25 percent standard can also be met through alternative energy resources like third-generation nuclear power plants, fuel cells, energy-efficiency programs, and clean coal technology that can control or prevent carbon dioxide emissions.

Figure 3 – Renewable Portfolio Standards



Almost half of all states have funds, often called “public benefit funds,” dedicated to supporting energy efficiency and renewable energy projects (see Figure 4). The funds are collected either through a small charge on the bill of every electric customer or through specified contributions from utilities. The charge ensures that money is available to fund these projects. Publicly managed clean energy funds from eighteen of these states have formed the Clean Energy States Alliance to coordinate public benefit fund investments in renewable energy.

Figure 4 – Public Benefit Funds

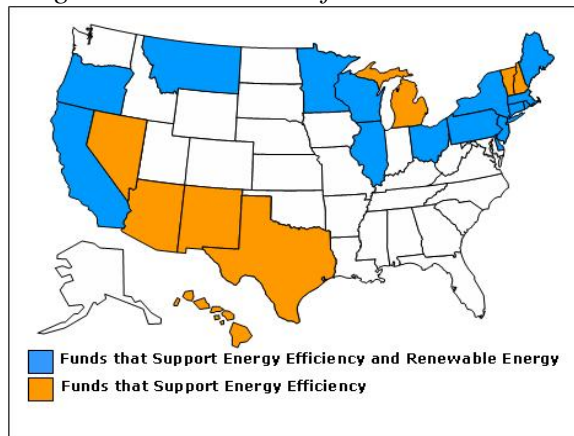
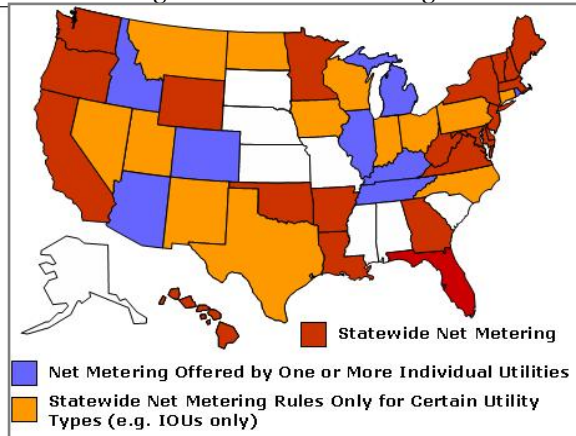


Figure 5 – Net Metering



Forty-two states have at least one utility that permits customers to sell electricity back to the grid, referred to as net metering. Twenty of these states offer net metering state-wide (see Figure 5). Forty-four states have utilities which offer green pricing, allowing customers the option of paying a premium on their electric bills to have a portion of their power provided from designated renewable sources. Six of these states – Colorado, Washington, New Mexico, Montana, Minnesota, and Iowa - have made green pricing options mandatory for electricity generators (see Figure 6).

April Supreme Court decision that greenhouse gasses should be considered pollutants under the Clean Air Act.

Many states provide incentives for the development of technologies that may make carbon capture easier, such as IGCC (integrated gasification combined cycle), and some are also investigating the potential to store carbon in geologic formations within their borders. West Virginia and Ohio, two major coal producers, are supporting a pilot project to sequester carbon in a deep underground rock formation on the border between the two states. The ability to capture and store carbon would facilitate the continued use of coal, a vital economic resource in many states.

The federal government has established minimum efficiency standards for approximately 20 kinds of residential and commercial products, including washers and dryers, refrigerators and freezers, dishwashers, and air conditioners. Numerous states, including Arizona, New York, Rhode Island, Washington, Maryland, Connecticut, California, and New Jersey have set standards on products not covered by federal standards.

Transportation policies

Transportation accounts for 27 percent of all GHG emissions in the United States; therefore, any successful strategy to address climate change must include the transportation sector. States have many options to address GHG emissions from transportation. California has adopted a requirement to reduce GHG emissions from new light-duty vehicles; this requirement is pending a legal challenge from the automobile industry. If upheld by the courts, California estimates that its standard will reduce annual greenhouse gas emissions by 30 million tons of CO₂ equivalent by 2020, and the potential for reductions is higher if additional states adopt California's standards. California has unique authority among states to set vehicle emissions standards, because of a special provision in the federal Clean Air Act. Other states have the option of either following federal standards or adopting California's. In September, 2007, the U.S. District Court for the District of Vermont upheld Vermont's decision to adopt the California standards by deciding against a group of automobile manufacturers charging that the costs to industry will be too high. EPA denied California's waiver request in December 2007; California and several other states have sued to have the decision overturned. Sixteen states have announced their intention to follow California's vehicle standards: Arizona, Colorado, Connecticut, Florida, Maine, Maryland, Massachusetts, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Utah, Vermont, and Washington.

Numerous states have mandates or incentives for biofuel production and use. Biofuels can have better GHG emissions performance than gasoline on a life-cycle basis, but the GHG emissions depend on how the fuel is made. This fact has sparked interest in adoption of low-carbon fuels standards (LCFS). In January 2007, Governor Schwarzenegger of California announced that his state would establish the world's first Low Carbon Fuel Standard (LCFS). It will apply to all transportation fuels sold in California, with the goal of reducing the carbon intensity of California's passenger vehicle fuels at least 10 percent by 2020. The LCFS includes provisions for market-based mechanisms – such as carbon credit trading – that will allow fuel providers to meet the new requirements in the most cost-effective manner. The standard is expected to substitute low-carbon fuels for up to 20 percent of current vehicle gasoline consumption and greatly expand the number of alternative and hybrid vehicles in the state.

Numerous states have policies requiring that a certain percentage of state-owned vehicles run on alternative fuels, such as ethanol or natural gas, or that the state fleet meet a fuel efficiency standard. Some states offer tax breaks for alternative fuels, gasoline/ethanol blends, alternative fuel vehicles, low-emission vehicles, or for converting traditional vehicles to run on alternative fuels.

Agricultural Policies

Agriculture contributes approximately 7 percent of total U.S. GHG emissions, with nitrous oxide (N₂O) accounting for two-thirds and methane (CH₄) for one-third of agricultural emissions. In addition to reducing these emissions, there are opportunities in agriculture to offset emissions from other sectors by sequestering greenhouse gases in biomass. In doing so, farmers may be able to tap additional revenue sources.

Biomass, as a low-carbon energy source, provides an opportunity for the agricultural sector to address climate change in a profitable way. For example, Iowa has pilot programs to improve production of switch grass to co-fire with coal in power plants.

Soil conservation techniques increase the amount of carbon stored in soil while improving soil quality. Compared to conventional tilling techniques, soil conservation techniques such as “no till” reduce fuel use, time, and cost of farmland preparation. Alaska, Idaho, Illinois, Nebraska, North Dakota, Oklahoma, South Dakota, and Wyoming have formed carbon sequestration advisory committees to investigate the potential for in-state agricultural carbon sequestration.

Emissions Targets and Climate Action Plans

Comprehensive climate plans combined with enforceable GHG emissions targets provide the highest certainty of significant emissions reductions. Thirty-eight states have climate action plans completed or in development; eighteen have state-wide emission targets (see Figures 7 and 8).

In September 2006 Governor Schwarzenegger signed AB 32, the Global Warming Solutions Act. The Act caps California's greenhouse gas emissions at 1990 levels by 2020. This legislation represents the first enforceable state-wide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. It requires the State Air Resources Board to establish a program for statewide greenhouse gas emissions reporting and to monitor and enforce compliance with this program. The Act authorizes the state board to adopt market-based compliance mechanisms including cap-and-trade, and allows a one-year extension of the targets under extraordinary circumstances. AB 32 builds on California Governor Arnold Schwarzenegger's 2005 Executive Order committing the state to GHG reduction targets equivalent to reaching 2000 emissions levels by 2010, 1990 levels by 2020, and 80 percent below current levels by 2050.

Governor Bill Richardson of New Mexico also signed a 2005 executive order to set GHG targets at achieving 2000 emissions levels by 2012, 10 percent below 2000 levels by 2020, and 75 percent below 2000 levels by 2050. These goals supplement both California's and New Mexico's existing climate-friendly policies including renewable portfolio standards, renewable energy tax credits, and energy efficiency goals. New Mexico is the first major coal, oil, and gas-producing state to set targets for cutting GHG emissions.

Notable actions include announcements in early 2007 by the Governors Blagojevich of Illinois, Corzine of New Jersey, and Gregoire of Washington setting new emissions targets for their respective states, and a September 2006 executive order by Arizona Governor Janet Napolitano to implement recommendations included in her state's Climate Change Advisory Group's Climate Action Plan and to establish a statewide goal to reduce Arizona's GHG emissions to 2000 levels by 2020, and 50 percent below this level by 2040.

Other actions include new target announcements in mid-2007 by Governors Ted Kulongoski of Oregon, Linda Lingle of Hawaii, and Tim Pawlenty of Minnesota. Oregon's HB 3543 directs the state to stop the growth of greenhouse gas emissions by 2010 and to reduce GHG emissions to 10

percent below 1990 levels by 2020 and to 75 percent below 1990 levels by 2050. Hawaii's Act 234, the Global Warming Solutions Act of 2007, mandates that statewide greenhouse gas emissions be reduced to 1990 levels by 2020. Finally, Minnesota's Next Generation Energy Act established statewide GHG emission reduction goals of 15 percent by 2015, 30 percent by 2025, and 80 percent by 2050, based on 2005 levels.

The process of developing a climate action plan can identify cost-effective opportunities to reduce GHG emissions that are relevant to the state. The individual characteristics of each state's economy, resource base, and political structure provide different opportunities for dealing with climate change. However, without strong incentives, climate action plans will not achieve real reductions in GHG emissions. A number of states have set up advisory boards or commissions to develop and/or implement climate actions plans. For example, North Carolina established a Legislative Commission on Global Climate Change to address the threats posed by global warming and determine the costs and benefits of the various mitigation strategies adopted by state and national governments, as well as to assess the state's potential economic opportunities in emerging carbon markets. Most recently, Governor Kathleen Sebelius of Kansas signed Executive Order 08-03, establishing the Kansas Energy and Environmental Policy Advisory Group. .

Florida Governor Signs Three Climate Change Related Executive Orders

On July 13, 2007, Florida Governor Charlie Crist signed three climate change related executive orders. EO 07-126 sets GHG emission reduction targets for state agencies and departments of 10 percent below current levels by 2012, 25 percent below by 2017, and 40 percent below by 2025. The order adopts the U.S. Green Building Council's LEED standards for all new state government facilities and all existing buildings owned by the Department of Management Services. EO 07-126 requires state-owned vehicles to be more fuel efficient and to use ethanol and biodiesel fuels when available. EO 07-127 sets statewide GHG emission reduction targets of 2000 levels by 2017, 1990 levels by 2025, and 80% below 1990 levels by 2050. The order directs the Florida Secretary of Environmental Protection to immediately develop rules to adopt the California motor vehicle GHG emission standards. The Florida Energy Code for Building Construction will be revised to increase the energy performance of new construction by at least 15 percent from the 2007 Energy Code. EO 07-127 requests that the Florida Public Service Commission initiate rulemaking to 1) require that utilities produce at least 20 percent of their electricity from renewable sources and 2) to authorize statewide net metering. Executive Order 07-128 creates the Florida Governor's Action Team on Energy and Climate Change to develop an Energy and Climate Change Action Plan to recommend ways to meet the new GHG reduction targets.

Figure 7 – States with Climate Action Plans

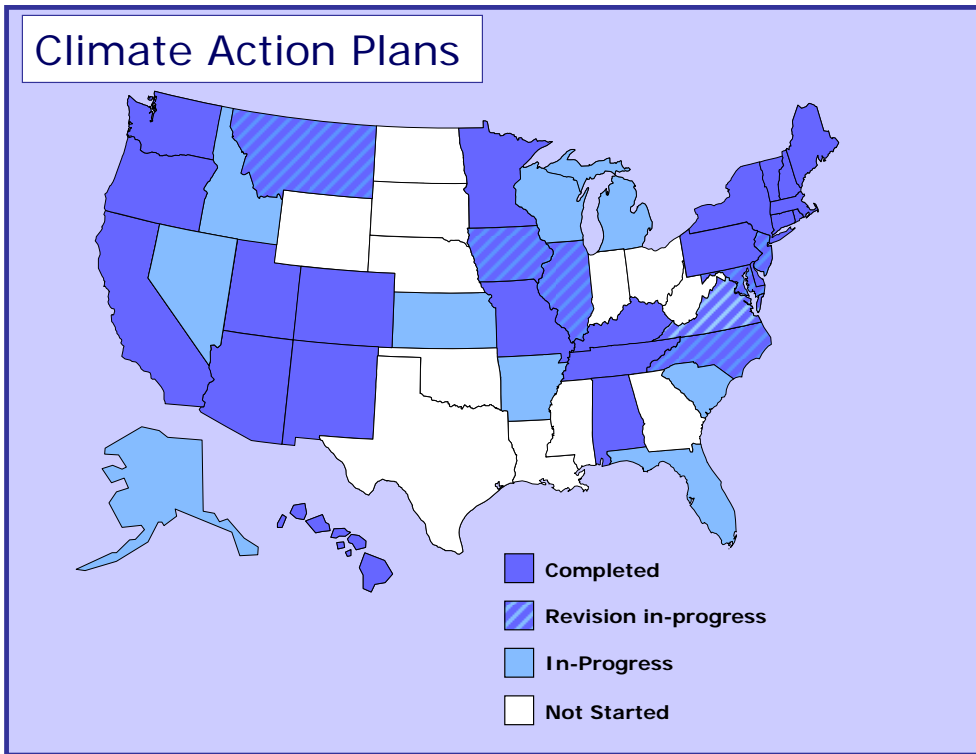
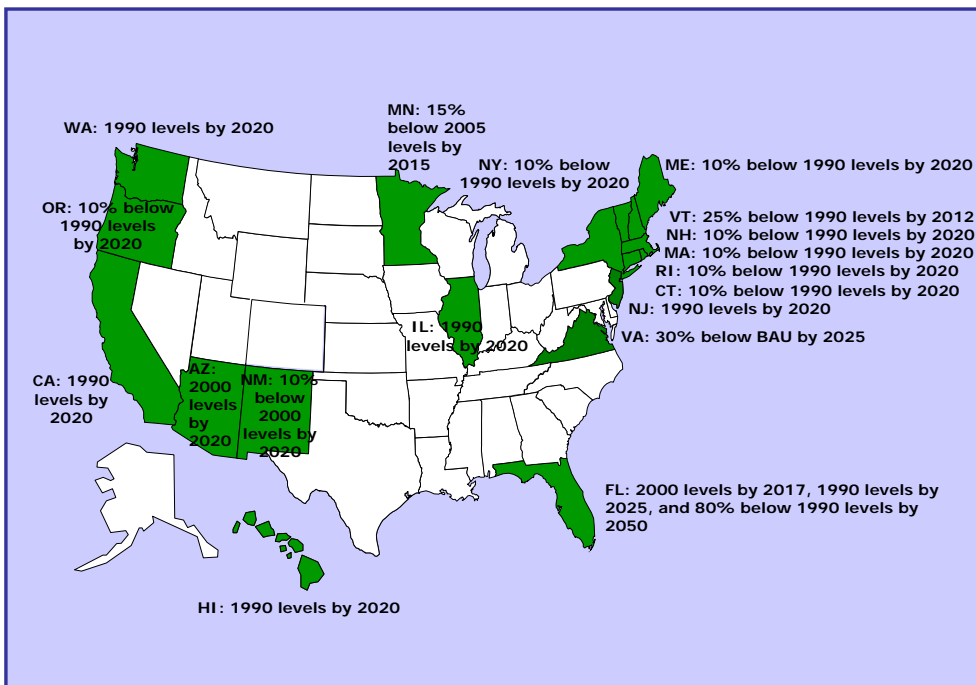


Figure 8 – State GHG Emission Targets



Conclusion

While most state climate change efforts have been implemented relatively recently, some lessons are already emerging for future state, regional and federal efforts. State programs such as emissions reporting and cap-and-trade systems should be designed so that they can easily be expanded or integrated into other programs. Design foresight and flexibility will help facilitate future policies at the state, regional, and federal level. Although garnering support for mandatory goals is sometimes difficult, these policies are generally more effective at achieving significant reductions than voluntary measures. States considering their options to effectively deal with climate change may consider beginning or joining a regional initiative in order to reduce climate impacts more efficiently while avoiding a regulatory patchwork and helping businesses more easily adapt to new policies.

As states move forward, they should be guided by a specific long-term emissions goal and a commitment to minimizing costs to achieve that goal. States may want to move toward a comprehensive approach incrementally, focusing first on policies that are relatively easy to implement and yield multiple benefits.

The actions undertaken by states to reduce GHG emissions are a collective first step on the United States' path to confronting climate change. The policy and technology lessons taken from these efforts should do much to inform future efforts at the national and international levels.