



NGA Center for
BEST PRACTICES



ADVANCING CLEAN ENERGY

A REPORT ON THE
CLEAN ENERGY STATES GRANT PROGRAM



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EXECUTIVE SUMMARY

The United States faces several significant challenges related to our energy future. We continue to rely heavily on resources from beyond our borders for a variety of our energy needs. At the same time, the high and often volatile cost of energy remains a concern to consumers and our energy consumption is a significant contributor to greenhouse gas emissions. Continuing down our current pathway threatens our economic well-being, energy security, environmental future, and quality of life. States have therefore begun to pursue the use of clean energy to help address many of these concerns.

THE CLEAN ENERGY STATES GRANT PROGRAM

As a component of the 2007-2008 National Governors Association's *Securing a Clean Energy Future* initiative¹, 12 states were selected through a competitive process to receive \$50,000 grants to help advance a clean energy project of their choosing. The objective of the grant program was twofold: to assist states in exploring and expanding new techniques for promoting renewable energy, energy efficiency, and clean transportation, and to help other states learn how innovative clean energy programs are being implemented at the state level. The 12 states selected were: **Alabama, Colorado, Delaware, Florida, Hawaii, Kansas, Maine, Maryland, Michigan, Montana, North Carolina** and **Utah**. Each identified one or more clean energy objectives and a plan for overcoming the challenges to achieving these goals.

The 12 participating states took a variety of approaches to advancing clean energy, generally focused around the following five themes:

- **Improving energy efficiency in new buildings:** **Alabama** developed building energy commissioning standards for its K-12 schools. **North Carolina** trained over 1,000 local building inspectors to improve state energy code enforcement;
- **Improving energy efficiency in existing buildings:** **Maryland** created a suite of energy efficiency programs for low- and middle-income residents. **Maine** developed short- and long-term solutions for reducing home heating oil use. **Michigan** partnered with utilities to launch an innovative public-private financing mechanism for building retrofits. **Delaware** educated state employees on energy efficiency and created a comprehensive database of state building energy use as part of a "lead by example" initiative;
- **Expanding renewable electricity generation and distribution:** **Montana** developed detailed assessments of its wind power and transmission potential. **Utah** completed an analysis of its wind, solar, and geothermal energy resources to identify the most promising "renewable energy zones" throughout the state and evaluate the cost of transmission to deliver renewable energy to load centers within the state;
- **Promoting cleaner transportation fuels and vehicles:** **Hawaii** performed an analysis of the policy and infrastructure requirements of widespread electric vehicle (EV) use and began to deploy the first stages of EV infrastructure. **Florida** completed a study of the life-cycle greenhouse gas emissions impact of various renewable fuels to inform development of a statewide Renewable Fuel Standard; and
- **Increasing funding for clean energy:** **Kansas** improved awareness of a federal funding program for agricultural energy efficiency, increasing participation by 70 percent. **Colorado** developed a carbon offset program that funds renewable energy production through private donations and promotes clean energy in local communities.

¹ See the initiative Web site for more information on *Securing a Clean Energy Future*: <http://www.nga.org/portal/site/nga/menuitem.751b186f65e10b568a278110501010a0/?vgnextoid=f080dd9ebe318110VgnVCM1000001a01010aRCRD&vgnnextchannel=92ebc7df618a2010VgnVCM1000001a01010aRCRD>



HIGHLIGHTS OF STATE PROGRESS

The 12 states that received a *Clean Energy States* grant furthered work on a diverse array of clean energy goals. Many of the participating states also were able to leverage the grant to receive additional funding for clean energy. Examples of the progress achieved during the *Clean Energy States Grant* process include:

Colorado: Colorado's goal was to develop a program to provide credible carbon offsets to consumers while funding clean energy projects within the state. They created the Colorado Carbon Fund (CCF) to receive donations from citizens wishing to reduce their carbon footprint and then use the money to finance Colorado-based clean energy. The CCF has received over \$400,000 in donations from more than six hundred donors and reviewed over 180 potential offset projects. **The CCF approved its first offset venture, a landfill gas-to-energy project, in July 2009, committing \$230,000 in offset funding and saving 40,000 metric tons of CO₂ equivalent annually.** The CCF has also developed the Project C campaign, designed to promote climate awareness and to fund small-scale energy conservation projects in local communities;

Florida: The state of Florida helped answer a difficult question surrounding the transition to renewable transportation fuels: Which fuels offer the greatest greenhouse gas reductions potential when replacing gasoline, factoring in the full life of the fuel from feedstock to consumption? Florida's newly created Renewable Fuel Standard (RFS) required the state to explore this issue and develop minimum GHG emissions reductions for renewable fuels sold in the state. **Florida conducted a comprehensive study of ethanol and other renewable fuels, looking at life-cycle greenhouse gas emissions from production to transportation to end-use combustion, as well as the environmental impact of feedstock sources on land and water resources.** The study is being used directly to create the emissions guidelines under the RFS as well as help the state develop a biofuels-based economic sector and infrastructure;

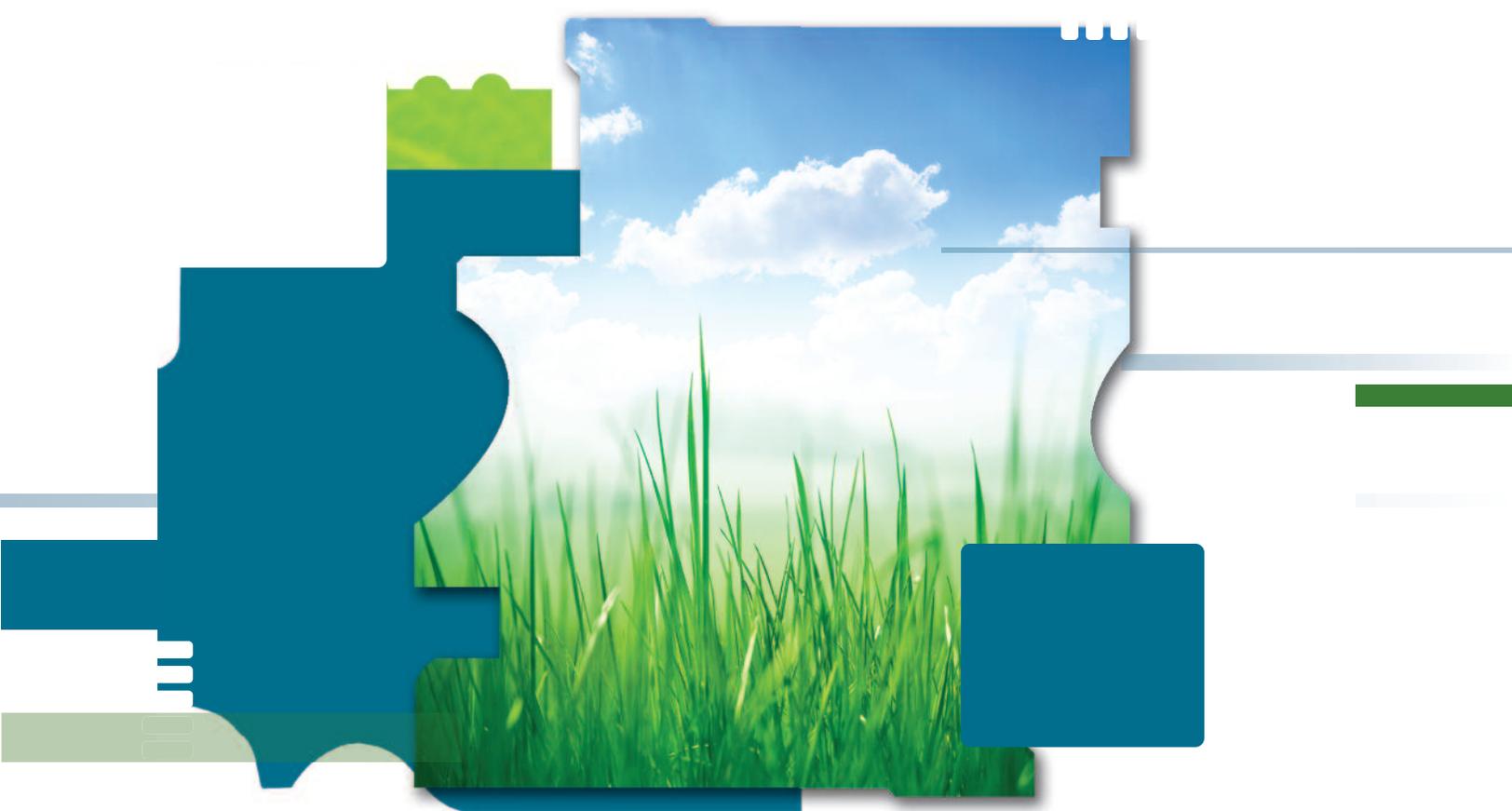
Maine: Maine sought to help its residents deal with the high cost of heating oil, which 80 percent of the state depends on for home heating. Participation in the *Clean Energy States Grant* program allowed the state to expand the scope of its activities regarding residential and commercial energy efficiency and the coordination of state efforts around funding energy efficiency improvements. **Maine developed and implemented a detailed short-term energy action plan that included increased funding for weatherization work and training, the distribution of 2,000 "Keep Maine Warm" kits, \$2 million for business energy efficiency improvements, and the creation of a "one-stop shop" for state energy efficiency resources.** Work done during the grant period also helped inform legislation signed into law addressing the state's long-term energy concerns;

Maryland: Maryland's aim was to develop a suite of low- and moderate-income energy efficiency programs to be funded by auction revenues from the Regional Greenhouse Gas Initiative (RGGI), the carbon dioxide cap-and-trade program among northeastern states. **The Maryland Energy Administration (MEA), which received the funds, collaborated with utilities and other stakeholders to design and implement a full spectrum of statewide demand reduction and energy efficiency programs.** This included a suite of residential energy efficiency programs for the low- and moderate-income sector, as well as a consolidated workforce training program for home energy retrofits;

North Carolina: The state of North Carolina sought to improve the energy efficiency of its building stock by increasing the awareness and enforcement of the state building energy code among local code officials and building inspectors. Prior to the grant period, trainings in the energy code were limited to three regional workshops held once per year, reached only about 10 percent of the state's over 4,000 local code officials, and offered no hands-on field trainings. **North Carolina was able to hold 22 classroom sessions and three field training sessions, reaching over 1,000 code officials, or one quarter of all code officials in the state, in the process.** The *Clean Energy States Grant* also positioned North Carolina to receive a competitive grant award from the US Department of Energy to do further work on energy code compliance; and



Utah: The *Clean Energy States Grant* program allowed Utah to begin the process of developing renewable energy resources within the state in a cost-effective manner. The grant has enabled the state to identify the concentrations of potential solar, wind, and geothermal resources and costs of intrastate transmission to bring resources to the market in order to meet its clean energy goals in the most cost-effective way. Phase I identified the location and megawatt potential of commercially developable wind, solar, and geothermal resources within the state. **Utah completed Phase I and developed a detailed assessment and accompanying GIS-enabled Web application of its renewable energy sources.** Also under this grant, Phase II of the project was initiated. This consisted of further refinement of the Phase I zones into 27 concentrated areas of renewable resources. Phase II also modeled the location and cost of building additional transmission capacity to connect the identified Phase II zones. An initial report on modeling methodology was developed for transmission scenarios and the 27 identified zones.







INTRODUCTION

THE CLEAN ENERGY STATES GRANT PROGRAM

In May 2008, the NGA Center for Best Practices (NGA Center) launched the *Clean Energy States Grant* program, enabling governors to bolster existing state efforts to develop and implement clean energy policies. The *Clean Energy States Grant* program assisted states in one of the following four pillars:

- Energy efficiency and conservation;
- Clean electricity generation;
- Clean transportation fuels and vehicles; and
- Clean energy research, development, and demonstration.

In June 2008, 12 states received grants of \$50,000 and spent the next year implementing state clean energy projects and attempting to overcome the hurdles that had previously slowed clean energy use. The states participating in the grant program were:

The original one-year time period for the grant was extended until October 2009 as the states worked to absorb and effectively manage the billions of dollars in clean energy funding provided under the American Recovery and Reinvestment Act (ARRA). Ultimately ARRA presented opportunities for states to leverage their work under the grant to better utilize newly acquired funds or contend for competitive grant opportunities, expanding the scope of what some states were able to achieve.

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|------------|------------|------------------|
| • ALABAMA | • HAWAII | • MICHIGAN |
| • COLORADO | • KANSAS | • MONTANA |
| • DELAWARE | • MAINE | • NORTH CAROLINA |
| • FLORIDA | • MARYLAND | • UTAH |

This report highlights the accomplishments of the 12 participating states, as well as some of the challenges that states developing new clean energy policies and programs can expect to face, along with strategies for overcoming them.



CLEAN ENERGY STATES GRANT PROGRAM: STATE SUMMARIES







ALABAMA

IMPROVING SCHOOL ENERGY EFFICIENCY THROUGH BUILDING COMMISSIONING

Overview

Alabama used the *Clean Energy States Grant* program to focus on improving energy efficiency in new K-12 schools. The state began several new school construction initiatives around the start of the grant program, providing an opportunity to make a large impact on school energy efficiency going forward. Alabama sought to develop new commissioning standards, designed to ensure that building systems work jointly and efficiently, as an effective and low-cost means of improving energy performance. This effort helped support the state's overall goal of reducing energy use in state-funded buildings by 20 percent.

Through the grant, Alabama created a new set of voluntary commissioning guidelines that the state hopes will eventually become standard for all new K-12 school construction in the state. Alabama distributed the guidelines to key stakeholders throughout the state including school superintendents, contractors, and architects, in order to promote the benefits of commissioning and the use of the new guidelines.

Clean Energy States Grant Goals

Alabama sought to develop new commissioning guidelines for school construction and to improve the understanding and utilization of commissioning. The state began the process aware of several misconceptions about commissioning within the building community and with a very low level of understanding among local school officials involved in the construction process. The state hoped to use the process to bring these stakeholders into the development of the guidelines, both to improve knowledge and ease the eventual deployment of the guidelines.

Alabama's goal of improving school building performance is tied to the state's larger energy efficiency goals. Executive Order 33, issued by Governor Bob Riley in 2006, requires state agencies and departments to lower their energy use 20 percent from 2005 levels by the end of 2010. The Alabama Energy Office is also working toward achieving the Energy Policy Act of 2005 goal of improving energy efficiency statewide by 25 percent, based on 1990 levels, by 2012. The commissioning guidelines are seen as an important element of the efforts to reach those goals.

Accomplishments and Challenges

Alabama used the grant to contract with the Cadmus Group, an environmental and energy consulting firm, to assist the state

and a team of stakeholders in developing a set of comprehensive guidelines. The result was the release of the *Commissioning Guidelines for K-12 Schools in 2009*. The guidelines were provided to both the Alabama State Department of Education and the Alabama Building Commission for further distribution and consideration. The State Energy Office also posted the guidelines on its Web site to be accessed by anyone interested in utilizing the commissioning process. The state held four public discussions of the draft document to promote a better understanding of commissioning. More than 200 stakeholders participated in these public forums.

The lack of adequate education and outreach around commissioning remains the biggest barrier to widespread implementation of commissioning. The state is working to overcome the perception that commissioning adds costs to a construction project when it instead cuts down on inefficiencies during the construction phase and reduces costs later in the form of better building performance. Alabama is also focusing on direct education to superintendents since they are often an integral part of the process of new school design but rarely have experience with architecture, construction, or building systems performance. The state hopes that familiarity with the commissioning guidelines will encourage more and better-informed involvement by school officials in the design and construction of high performance schools.

Next Steps

Alabama sees a number of opportunities to build upon the development of the commissioning guidelines. The state is continuing to educate individual school districts about commissioning and hopes to utilize the Energy Star Portfolio Manager tool to evaluate new schools and provide success stories around the energy performance of new schools that adhere to the guidelines. The State Energy Office also will continue to work with the State Department of Education and Building Commission, as well as with the Permanent Joint Legislative Committee on Energy Policy, to address building energy performance and advocate the adoption of the guidelines created during the grant process as an enforceable statewide standard for commissioning in K-12 schools.

In addition, Alabama has made K-12 school energy efficiency an integral part of its State Energy Plan under the American Recovery and Reinvestment Act (ARRA). Fourteen school districts in the state received nearly \$4 million in federal funds for energy retrofits in existing school buildings, with a little more than \$1 million in additional school energy retrofit grants expected to be awarded this spring. The state expects these two complementary efforts to have a lasting impact on the energy efficiency of K-12 schools in Alabama.



COLORADO

DEVELOPING THE COLORADO CARBON FUND TO SUPPORT CLEAN ENERGY

Overview

Colorado supported the development of clean energy projects through the creation of a voluntary carbon offset program, the Colorado Carbon Fund (CCF), to support energy efficiency, renewable energy, and greenhouse gas mitigation projects in the state. The CCF accepts public donations for the purchase and retirement of carbon offsets in the form of clean energy projects within the state.

The Governor's Energy Office (GEO) spearheaded the development of the CCF. In doing so, the GEO first contracted with The Climate Trust, an Oregon-based nonprofit that specializes in carbon markets and offsets, to oversee both the financial and programmatic aspects of the CCF. The Climate Trust and GEO also developed a stringent set of criteria for potential projects:

- Projects must be developed within the state of Colorado;
- Projects must require CCF funding to be implemented;
- Projects must reduce emissions through clean energy or energy efficiency projects, as opposed to carbon sequestration;
- Projects must reduce GHG emissions at the project site rather than replacing grid electricity;
- Projects must reduce at least 40,000 metric tons of CO₂ equivalent; and
- Projects must be currently unimplemented.

The CCF also includes the Project C campaign, an educational program designed to promote awareness of greenhouse gas (GHG) emissions and the state's climate strategy in local communities. The GEO has partnered with 10 communities in Colorado so far and has pledged to invest 20 percent of donations in smaller projects and outreach programs through community-based organizations.

The Clean Energy States Grant allowed the GEO to start the CCF and Project C from scratch and develop it into a fully functioning program. This includes the development of the CCF Web site, which serves not only as an important source of information on the programs, but also as a place where donations can be made directly for the retirement of offsets.

Clean Energy States Grant Goals

The creation of the CCF as a funding source for local clean energy projects supports the state's climate change mitigation efforts under Colorado Governor Bill Ritter. In April 2008, Governor Ritter issued Executive Order D-004-08 which established GHG reduction goal of 20 percent below 2005 levels by 2020 and 80 percent below 2005 levels by 2050.

The CCF and Project C support implementation of the statewide goals, improving the public awareness and credibility of offsets as a means for financing clean energy projects. The GEO also hopes to encourage Colorado citizens to be more active in supporting state climate goals by measuring their carbon footprints, reducing emissions where possible, and offsetting emissions through donations to the CCF. Such activities are anticipated to generate public support for similar future projects.

Accomplishments and Challenges

A key accomplishment under the challenge grant process was the approval of the CCF's first project in July of 2009. The Carbon Fund Advisory Committee, on the recommendation of The Climate Trust, approved the development of a 1.6 megawatt landfill methane-to-energy project scheduled to go online in the spring of 2010. The CCF used funds to purchase \$230,000 worth of offsets from the project. This will reduce greenhouse gas emissions equivalent to 25,000 metric tons of carbon dioxide per year, which is the same as taking 7,500 cars off the road. As of November 2009, the CCF had reviewed applications for more than 180 projects and received over \$400,000 in donations from 600 donors.

While the GEO set a goal of collecting and distributing over \$3 million in the first three years of the CCF program, the economic downturn has limited the financing available for clean energy projects nationwide, which has reduced the number and amount of private donations to the CCF. The state also believes that offset developers and donors will continue to be hesitant to move forward until the debate on federal climate legislation is resolved. Despite these challenges, the CCF still hopes to reach \$1 million in donations by June 2010.

Next Steps

In part due to the uncertain economic and political outlook nationally, the CCF is restructuring its approach to finding and approving projects. For the next round, the CCF will forgo its previous requirements around project size, emissions reduction potential, and location in order to keep the fund active, to encourage further donations, and to continue lowering statewide emissions. The CCF will give \$250,000 in total funds to 5 smaller projects throughout the state for the installation of

solar hot water heaters at commercial sites. Since the individual projects will be relatively small, they will not receive third-party verification from The Climate Registry but will, instead, undergo monitoring and verification from the state and will not be considered as offsets. A request for proposals was released in January 2010. The state expects to announce the project awards in May and have them go online by the end of 2010.

The GEO also has received a request from its partner communities to appropriate a larger percentage of donations back to

local projects and efforts through the Project C campaign. The CCF also is considering expanding the potential pool of offsets to include agricultural projects in the future.

Despite market uncertainties, the Colorado Clean Energy States Grant has helped the state and the GEO to continue to think creatively about clean energy deployment and to promote local renewable energy projects in Colorado.





DELAWARE

PROMOTING ENERGY EFFICIENCY THROUGH IMPROVED BUILDING DATA AND EMPLOYEE EDUCATION

Overview

Delaware concentrated on two specific goals: compiling an energy use database for specific state buildings and creating an outreach campaign to educate employees about the importance of energy efficiency. In January 2008, Governor Ruth Ann Minner announced an initiative to lower energy use in state facilities by 10 percent during the following year. The focus on creating a state building energy use database and fostering a behavior change among state employees through education and outreach was seen as a critical first step in realizing this goal. Since the change of administrations in January 2009, Governor Jack Markell has made energy efficiency and environmental stewardship a priority through the issuance of a “Leading by Example” executive order in February 2010, which sets an even broader set of clean energy targets for state operations.

Officials in the Delaware Office of Management and Budget (OMB) and the Department of Natural Resources and Environmental Control (DNREC) hired an energy consultant to collect and analyze energy consumption data from 12 priority state government buildings. The team developed a three-part program and a message-specific Web site to educate state employees on the importance of conservation and energy efficiency. Through these efforts, the state has made progress in tracking energy consumption trends in its state buildings and in fostering behavior change among state employees.

Clean Energy States Grant Goals

The two key goals of Delaware’s project were to create an energy use database for its state buildings and an outreach campaign to educate and inform employees on how they can make a difference in energy conservation in their workplace. The former would provide a benchmark against which the state would measure progress in achieving its goal of a 10 percent reduction in energy use. The energy savings benchmark and the introduction of an energy education outreach campaign were viewed as critical elements in moving towards established energy savings goals and in building momentum for a larger “lead by example” policy for the state government.

Accomplishments and Challenges

Delaware was able to accomplish both its data and education goals. Three years of energy use information for the 12 priority state buildings was assimilated into a single database, including

electricity, fuel oil, and natural gas usage. Benchmarks were created for each building, providing a monthly baseline for each energy use and enabling the state to track and monitor energy use in the future. In addition, the most energy intensive buildings were identified, and the Division of Facilities Management created a priority list of high impact and cost-effective energy efficiency improvements for each building.

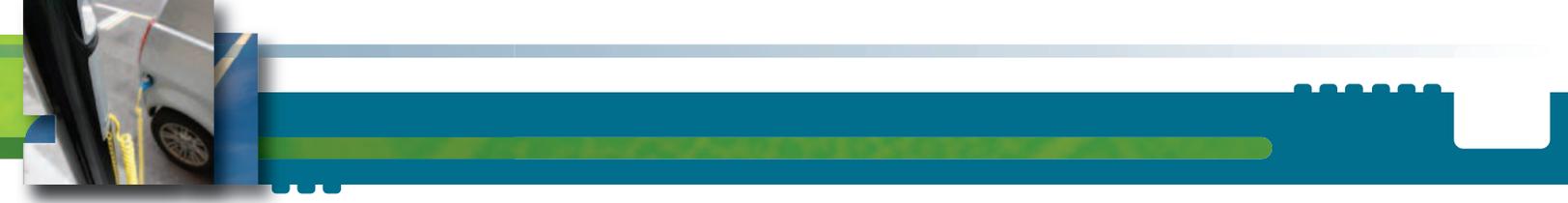
The state launched the www.green.delaware.gov Web site as part of its education campaign with links to energy efficiency, environmental protection, technology, and recycling information. Over 220 smart surge protector devices and accompanying education placards explaining how the product worked were placed in the 12 identified buildings. Finally, the state purchased 75 automatic light sensors for installation in common areas in the 12 buildings.

The most significant challenge for Delaware was the transitioning of administrations, which brought about new leadership throughout the state government, including the OMB and DNREC. The state’s budget shortfall and a realignment of services across state agencies also created unforeseen challenges in effectively implementing the program. Delaware was able to meet its *Clean Energy States Grant* goals despite the limited timeframe and believes its goals and timetables for reducing state energy use are still reachable.

Next Steps

Delaware will continue making progress towards its energy reduction goal by building on the energy database and the education outreach campaign. Governor Markell issued a Leading by Example executive order in February 2010, which outlines various steps to achieve energy efficiency within state government operations. All state executive branch agencies have a target of a 10 percent overall reduction in energy consumption by 2011, 20 percent by 2013, and 30 percent by 2015, compared to 2008 consumption. Outcomes of the education outreach campaign will be quantifiable in coming months, and the state will continue actions based on the results.

Participation in the *Clean Energy States Grant* program has allowed Delaware to recognize that the availability of building energy use data and awareness among employees about energy efficiency and conservation measures can further accelerate the state’s efforts to achieve its clean energy goals. As a result of the groundwork laid during the project, Delaware expects to see positive changes in behavior and quantifiable changes in energy use with the help of the new available data and installed technology.



FLORIDA

ANALYZING THE LIFE-CYCLE GREENHOUSE GAS EMISSIONS OF RENEWABLE TRANSPORTATION FUELS

Overview

The Florida Energy and Climate Commission (The Commission), advised by the Florida Energy Systems Consortium, conducted an initial study evaluating the life-cycle greenhouse gas (GHG) emissions associated with ethanol. In May 2008, the Florida legislature created a Renewable Fuel Standard (RFS) that will require all gasoline sold or offered in Florida to contain between 9 percent and 10 percent fuel ethanol by volume at the conclusion of 2010. According to the legislation, any fuel introduced as part of the RFS must reduce life-cycle GHG emissions. The Commission was charged with determining the acceptable minimum emissions reduction levels for fuels under the RFS. The state is looking to develop the market for renewable fuels infrastructure and production within Florida, and to shape policy around the importation of biofuels into the state, its agricultural land and water use, and its transportation planning.

Using the support of the *Clean Energy States Grant*, the University of Florida (UF) produced a report that the state will use to make recommendations about the life-cycle GHG emissions of various fuel mix scenarios. The study looked at a diverse portfolio of domestic and foreign biomass sources, including local agricultural waste. This effort will allow the state to make an informed decision based on Florida-specific considerations.

Clean Energy States Grant Goals

The goal of Florida's participation in the *Clean Energy States Grant* program was to gain insight into implementing its new RFS and the potential of lowering state GHG emissions. The state was concerned that looking only at the end-use emissions of certain renewable fuels would not capture all of the emissions associated with feedstock growth, production, and transportation. The analysis sought to determine a level of GHG emissions reductions that met state goals and was technically feasible.

Accomplishments and Challenges

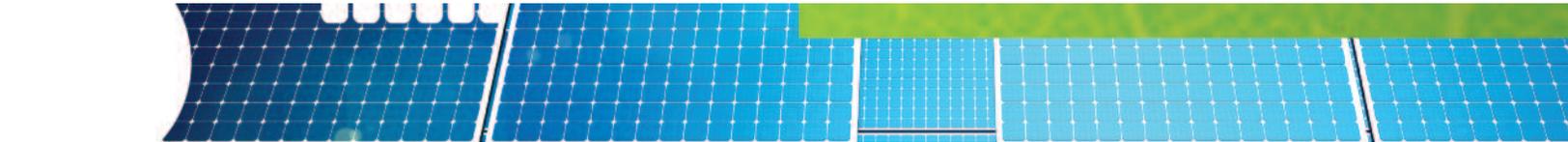
The study provided several key insights into how the RFS could be achieved and the corresponding effects on overall GHG emissions, as well as land and water use. It found that the potential outcomes of implementing the RFS ranged from a 17 percent increase in emissions under a reference scenario that assumed no further changes in technology or policy² to a 40 percent reduction in emissions by 2020 through the use of cellulosic ethanol for 25 percent of transportation fuel use and zero growth in vehicle miles traveled (VMT). Relying entirely on home-grown feedstock in Florida proved to be prohibitively land and water intensive, while sourcing ethanol from Midwestern corn or Brazilian sugarcane triggered high life-cycle emissions because of land use and transportation impacts.

The study also brought attention to the vital role of VMT in total emissions. Projected population and VMT growth will be significant factors in determining the level of fuel that needs to be produced and the corresponding emissions at the combustion stage. Because of this impending challenge, the Commission sees a need to tackle VMT issues as part of the overall effort to reduce emissions.

Next Steps

The Commission is required to submit its final recommendations for the appropriate average level of GHG reductions for biofuels to the president of the Florida Senate and speaker of the Florida House of Representatives no later than December 31, 2010. These recommendations will be based on the results of the analysis done under the grant including the life-cycle emissions determination. The recommendations also will present potential barriers to RFS compliance in the near and long term and how this might affect GHG emissions levels.

The adoption of the RFS also is driving Florida to develop its own biofuels-based economy. The state has given a \$20 million grant to the University of Florida for cellulosic ethanol research, as well as \$25 million to private companies to develop state-of-the-art ethanol production processes and facilities. The state is looking to improve its transportation fuel infrastructure to meet the changing supply and demand for renewable fuels that the RFS will bring about.



² The reference scenario assumed that current suggestions and commitments for reducing GHGs in the state are adhered to. This is distinct from the "business-as-usual" scenario, in which GHG emissions from transportation grew nearly 45 percent by 2020.



HAWAII

BUILDING A COMPREHENSIVE ELECTRIC TRANSPORTATION NETWORK

Overview

Hawaii's goal was to analyze transportation sector pathways to meet the Hawaii Clean Energy Initiative (HCEI). The HCEI is a partnership between the state and the US Department of Energy with the long-term goal of achieving 70 percent of Hawaii's energy from clean energy sources by 2030. The state currently relies on expensive imported petroleum for nearly all of its transportation needs, making this sector the most challenging for meeting the HCEI goal.

Hawaii sees the opportunity to deploy advanced electric vehicles (EV) running on clean electricity sources as a promising way to reduce the use of costly imported oil. As a result of their participation in the NGA Center's *Clean Energy States Grant*, Hawaii made significant progress at both the technical and policy level to speed deployment of EVs to market.

On the technical end, a state report found that "Hawaii is EV ready." At the same time, the state-led Transportation Working Group on Non-Petroleum Fuels and Vehicles helped spur policy initiatives on EV infrastructure, vehicle demonstrations, and outreach partnership developments.

Clean Energy States Grant Goals

To understand and facilitate a successful transportation sector transformation, Hawaii sought to analyze various policy and regulatory options and their potential impact on consumer adoption of grid-connected vehicles; infrastructure requirements for successful deployment; and potential technical and financial benefits for the State's electricity grids. Specific research needs identified included:

- Analysis of issues associated with large scale grid-connected EV adoption;
- Assessment of cost, feasibility, and location of vehicle charging and battery exchange infrastructure; and
- Analysis of scenarios for various levels of EV adoption.

Accomplishments and Challenges

During the grant period, Hawaii completed an *Analysis of Smart Electric Vehicle Infrastructure Requirements for Hawaii*, addressing the analytic needs identified above. The report concluded that EVs can provide numerous energy and economic benefits to Hawaii, particularly as their introduction can occur at a rate compatible with the introduction of renewable elec-

tricity on Hawaii's electrical grid. The report also looked at the technical and policy challenges to EV deployment.

Based in part on the underlying research report, the state has embarked on a number of pilots or initiatives designed to spur EV adoption. These include public-private agreements, incentive programs, and mandates. Each is aimed at reducing the transportation sector's dependence on petroleum. They include the following activities:

- On October 20, 2008, an Energy Agreement was signed by the State of Hawaii and the Hawaiian Electric Companies to accelerate energy efficiency and renewable energy. The agreement calls for the deployment of thousands of EVs;
- From July through November 2008, the Transportation Working Group of the Hawaii Clean Energy Initiative evaluated a variety of potential initiatives to reduce the petroleum dependence of Hawaii's transportation sector. The Working Group has since been expanded to include automobile dealers, vehicle manufacturers, rental car companies, and others; and
- Act 156, signed by Governor Linda Lingle in June 2009, establishes the development of non-fossil fuel transportation as a state policy goal, requires the designation of parking spaces for EVs, requires state and county agencies to prioritize EV infrastructure development, and provides EV and other advanced vehicle grant programs. EVs must be designed to be charged primarily by renewable energy sources or be able to be integrated intelligently with the electrical grid.

In addition, the state announced the following pilots and demonstrations:

- Better Place and Phoenix Motorcars both announced EV projects in Hawaii;
- Six fleets entered into partnership with the Advanced Vehicle Testing Activity of the U.S. Department of Energy to use plug-in hybrid electric vehicles (PHEVs) on Oahu and Maui;
- The Hawaii County Building is equipped with 22 EV plug-in conduits; the new Civic Center will include 14 EV conduits, with plans for expansion; and
- The State of Hawaii's Department of Hawaiian Home Lands announced plans to build homes that will feature a variety of energy efficiency measures and include an "EV ready" garage. Approximately 250 of these homes are under construction.



Next Steps

The next steps aggressively engage the private sector. In the near term, the state is seeking to create additional public-private partnerships with automobile dealers, municipalities, original equipment manufacturers, and conversion companies. The aim of these partnerships is to bring new products to the Hawaiian market. The Hawaii Automobile Dealers Association is likely to make EVs a theme of its upcoming auto show.

Partnerships and demonstrations of electric and PHEVs are occurring in state and municipal fleets. This includes the establishment of an EV users group in partnership with the Honolulu Clean Cities Coalition and local NGOs. These efforts are utilizing public outreach events to involve and inform the public on the emissions and oil savings that can occur from an integrated, comprehensive approach to electrifying Hawaii's vehicle markets.



KANSAS

INCREASING AWARENESS OF USDA RURAL ENERGY EFFICIENCY OPPORTUNITIES

Overview

Kansas focused on an area that would have a significant impact on its economy: agricultural energy use. Specifically, Kansas worked to improve awareness of and applications to the US Department of Agriculture (USDA) Rural Energy for America Project (REAP). REAP was created in the 2008 Farm Bill and is designed to provide funding for renewable energy generation projects and energy efficiency improvements for farms, ranches and small businesses in rural areas. Energy accounts for approximately 15 percent of the direct costs of agricultural production in Kansas, while energy use for livestock feed can have significant indirect cost impacts, as well.³ Officials in Kansas found that other states, particularly Nebraska, Iowa, and Minnesota, had been far more successful in taking advantage of USDA REAP funding, either in the number of applications submitted or the dollar amount of grants and loans received. The State Energy Office sought to determine why Kansas residents had been so reluctant to file applications for REAP funds and what steps the state could take to best utilize this funding opportunity.

The Kansas State Energy Office hired a consultant to meet with farmers across the state to gather information, promote the program, and assist residents with applications. While the state did not fully meet its initial goals for the program, it did increase applications by 70 percent. It is taking the lessons learned from the grant process and implementing several steps to achieve success in the future.

Clean Energy States Grant Goals

The overarching goal of Kansas's project was to increase awareness of REAP funds among state residents. To measure its success, the state set an initial goal of 75 applications for the 2009 USDA funding announcement. For the 2007 round of funding (known then as the 9006 program), Kansas submitted only 12 applications to the program for awards totaling under \$250,000. In comparison, Nebraska submitted 102 applications, receiving over \$12 million in assistance, while Iowa submitted 55 applications and received more than \$16 million. Given the success of the program in neighboring, agricultural states, Kansas recognized this as an important opportunity to fund energy efficiency.

The State Energy Office also sought to determine the barriers that had limited applications in the past. It found that most of its assumptions regarding limitations were confirmed: the application process was intimidating and daunting; awareness of the program was consistently low; the REAP process was not an integral part of state energy plans; and an adequately large and trained audit workforce was not available. This last assumption proved to be the area in which Kansas most underestimated the barriers to REAP applications in the state.

Accomplishments and Challenges

While Kansas did not meet its goal of 75 REAP applications for the most recent funding announcement, the state assisted in the completion of 44 successful applications by September 2009, an increase of 70 percent from 2008. The state also has prepared 10 applications for the next—as yet unannounced—funding opportunity. State Energy Office officials believe this is a promising step because past applications have not been prepared prior to the announcement of funding opportunities.

The significant and unexpected challenge for Kansas was a delay in the actual announcement of funding from the USDA. Kansas officials expected the announcement to occur in January, giving their consultant five months to work with potential applicants. Because the announcement was not made until the very end of April, this gave the consultant little time to actually assist in the application process during the contract period, which was to be the bulk of his duties. However, he was able to assist the state in promoting awareness of the program and by performing outreach on behalf of the state to potential applicants.

Next Steps

While Kansas officials await the next round of REAP funding, they are continuing to work on various programs that they expect to bolster the effectiveness of the REAP program and the work done under the *Clean Energy States Grant*. The state will hold several comprehensive Agricultural Energy Efficiency workshops throughout the state in 2010 with the goal of beginning to change consumer behavior around energy use and agriculture. Kansas also is working on determining what resources will be needed to further improve energy efficiency in the state, including programs for auditor and contractor training to help guarantee that improvements done under the REAP program are achieving energy savings. The State Energy Office set a goal to have these resources defined by the end of 2010.

³ Kasten et al., 2006, *Energy Use in the Kansas Agricultural Sector*, Report Submitted to the Kansas Energy Council, June 15, 2006: http://www.kec.kansas.gov/reports/FinalReport_EnergyInAg_6_15_06.pdf



Participation in the grant program has allowed Kansas to recognize the barriers to improving energy efficiency and to better utilize an available source of funding. While the state still expects that it will be several years before it reaches the number of successful applications of some neighboring states, Kansas has laid the groundwork for making agricultural energy efficiency a priority within the state.





MAINE

REDUCING HOME HEATING OIL USE

Overview

Maine's effort coincided with a challenge issued directly by Governor John Baldacci to his Cabinet: determine how to reduce consumption of home heating oil use in Maine while also addressing long-term energy issues in the state. This opportunity allowed the state to begin a broader policy debate around energy use and to develop several programs to lower heating oil, gasoline, and diesel consumption for homes, businesses, and transportation.

The work was done in conjunction with the Governor's Pre-Emergency Energy Task Force, which was established in November 2007 and then reconvened in the summer of 2008. The short-term energy action plan put forth by the task force included measures to simplify the accessibility of state resources, information, and assistance around energy efficiency; expand the residential weatherization program; increase the availability and utilization of home energy audits; develop new financing tools for public and commercial building improvements; expand public transportation options; and work with local governments and other groups to assess the needs of individual communities.

As a result of its participation in the *Clean Energy States Grant* program, Maine laid the groundwork for a multi-year strategy for energy efficiency and energy use throughout the state. Maine worked with expert consultants to help design and implement its energy efficiency programs and utilize American Recovery and Reinvestment Act (ARRA) funds dedicated to energy programs. The grant program is allowing the state to set concrete energy efficiency targets and take the necessary steps towards meeting them.

Clean Energy States Grant Goals

Maine's initial goals were directly related to the use of home heating oil. Maine residents rely on oil for 80 percent of their heating needs, and the timeframe immediately prior to the start of the *Clean Energy States Grant* process saw the price of oil reach a record high. In order to protect consumers from some of the price volatility associated with home heating oil, the state set a short-term goal of reducing heating oil use by 10 percent in five years. A comprehensive weatherization program was the primary vehicle for reaching that goal and the state has set an interim goal of weatherizing 4,000 homes over the next two years.

The state also had a larger goal of reducing its petroleum consumption over the long term. In June 2009, the governor

signed legislation establishing the Efficiency Maine Trust, an independent entity given the task of administering energy efficiency and renewable energy programs in Maine. The state expects that having a dedicated agency for the purpose of coordinating and delivering energy efficiency and renewable energy programs will allow it to continue the work done during the grant process into the future.

Accomplishments and Challenges

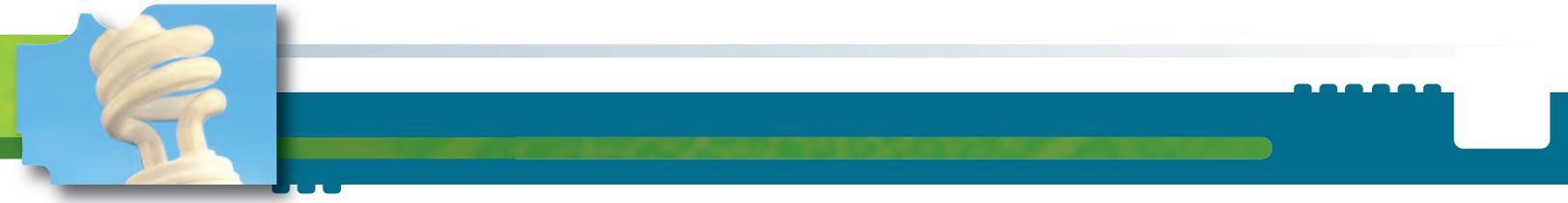
Maine accomplished several elements of its short-term energy plan that the state believes will put it on its way to reaching its five-year home heating oil reduction goal, as well as reductions in energy use generally. Some of these accomplishments include \$2 million set aside by the Finance Authority of Maine for business energy efficiency improvements; the distribution of 2,000 "Keep Maine Warm" kits and 500,000 copies of a Do It Yourself Weatherization guide to saving money on home heating; expansion of the GO Maine public transportation service; and additional state funding for weatherization, low-income heating assistance, and auditor and contractor training.

The primary challenge that Maine currently faces is that since the initiation of the program, the price of oil has dropped significantly. This has made it somewhat harder to promote the cost-effectiveness of a significant push towards energy efficiency. However, the state is still moving ahead with its current plan for weatherization as well as additional programs slated to begin in the winter of 2010, as prices are expected to rise in the future.

Next Steps

Efficiency Maine Trust has several goals for improving energy efficiency in the state, codified within the enabling law, which it hopes to achieve on both a short- and long-term basis. The trust has just developed a three-year plan to put the state on the path towards achieving the following goals:

- The weatherization of all Maine homes and half of Maine businesses by 2030;
- A reduction in energy use due to energy efficiency measures that lowers the state's electricity use by 30 percent, natural gas use by 30 percent, and heating oil use by 20 percent, all by 2020;
- A reduction in greenhouse gas emissions due to the heating and cooling of Maine homes to 10 percent below 1990 levels by 2020, with an open-ended goal of achieving 85 percent below 2003 levels; and
- The utilization of cost-effective energy efficiency measures for all electric and natural gas customers.



By developing various energy efficiency programs through the *Clean Energy States Grant* process and the reconvening of the Task Force, Maine has been able to efficiently utilize and leverage ARRA funds to meet some of its early energy use reduction goals.





MARYLAND

PROVIDING ENERGY EFFICIENCY TO LOW- AND MODERATE-INCOME CITIZENS

Overview

Maryland's goal was to develop a suite of low- and moderate-income energy efficiency programs to be funded by the Regional Greenhouse Gas Initiative (RGGI) funding stream.⁴ Legislation passed in late spring 2008 required the Maryland Energy Administration (MEA) to work with utilities and other stakeholders to implement a full spectrum of demand reduction and energy efficiency programs throughout the state by early 2009. The *Clean Energy States Grant* funds enabled Maryland to better coordinate across state agencies. This helped the state finalize a suite of residential energy efficiency programs for the low- and moderate-income sector, including a consolidated workforce training program for home energy retrofits.

Clean Energy States Grant Goals

At the outset of the NGA Center grant period, MEA and its consultant, Vermont Energy Efficiency Corporation (VEIC) were in the process of developing various low- and moderate-income program options. NGA Center grant funds supported a portion of the work by VEIC to review these options with stakeholders, including the MEA RGGI Advisory Board, legislative committees, and staff from the governor's office. Based on this review and analysis, the various programs were refined and included in the MEA's final 2009-2010 Program Book.

These programs are:

1. Multifamily Program: This program will serve Marylanders at 85 percent of statewide median income. The program is being run in collaboration with the Maryland Department of Housing and Community Development (DHCD). Approximately, \$10 million in RGGI and federal stimulus funds will support the renovation of 2000-plus units across the state. Money from RGGI and federal sources will be matched with other tax-exempt funding streams. Utilities in Maryland are not directly serving this population base. The multifamily retrofit program launched its first large scale project involving 250 plus units. Eight to 15 additional projects will be funded over the next year with RGGI and federal stimulus funding. These efforts are expected to reduce energy use by 15 to 20 percent in individual housing units;

2. Retrofit Training Standardization: In the initial phase of the grant, Maryland had two residential home retrofit programs in operation: (1) Home Performance with Energy Star, and (2) DOE funded weatherization programs through DHCD. After months of discussions between DHCD, MEA, community colleges, utilities, and other stakeholders, a general home retrofit curriculum plan developed. The retrofit training program is just getting underway but will eventually provide the resources to implement energy savings programs for a variety of entities; and

3. Community Low-to-Moderate-Income Grants: This program is targeted to non-profit agencies and local governments that are working to get energy efficiency programs established to benefit low- and moderate-income customers. The intent of this program is to encourage innovative programs at the community level. Local community programs also are encouraged to leverage utility energy efficiency program incentives as they implement MEA grants. MEA awarded over 60 grants in 2009 and is currently in the process of soliciting 2010 grant applications for \$3.2 million in funding from RGGI.

Accomplishments and Challenges

The program was successful in achieving its core goal of developing a suite of low- and moderate-income energy efficiency programs to be funded by the Regional Greenhouse Gas (RGGI) funding stream.

The main challenge was having the utilities focus on the broadest range of programs to achieve the goals of EmPOWER Maryland while ensuring MEA developed programs that were not duplicate programs from those the utilities were planning to run. MEA was in a good position to minimize the flexibility of such overlap, thanks in part to the challenge grant and its more flexible funding from RGGI to work through the program implementation details. This also meant that MEA took on the role of initiating some of the market transformation programs, including those noted above, and working out the details of program implementation, with the eventual goal of moving the program to the utilities for the long term. As a result, there is now greater coordination between utilities and state managed programs, including a series of ongoing meetings between utilities, the state, and various stakeholders.

⁴ The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by 10 Northeast and Mid-Atlantic states to limit greenhouse gas emissions through a cap-and-trade program. Revenues are generated via emissions auctions. http://www.rggi.org/states/program_investments



Next Steps

The work done under the NGA Center's *Clean Energy States Grant* allowed MEA to develop program ideas that would complement efforts planned by utilities in the implementation of the EmPOWER Maryland. MEA, the utilities, DHCD, and the PSC are continuing to hold review sessions on energy efficiency programs to ensure close coordination of efforts. In

2010, MEA and a joint group of utilities will be engaging the services of evaluation, measurement, and verification (EM&V) contractors who will provide their respective parties with information on program design changes as well as energy savings metrics. Modified program designs will result from ongoing EM&V efforts in Maryland over the next year.





MICHIGAN

DEVELOPING AN INNOVATIVE ENERGY EFFICIENCY FINANCING PROGRAM

Overview

The goal of Michigan's effort was to stimulate new markets for uptake of energy efficiency and renewable energy. Michigan sought to develop an on-bill financing program that allows consumers to pay for clean energy upgrades over time through additional charges on their utility bill. The program is designed to remove substantial barriers to consumer investments in energy efficiency and renewable energy.

The state launched an initial pilot program and developed a final plan for the statewide implementation of an on-bill energy efficiency residential financing program known as *Michigan Saves*. The on-bill financing program is expected to increase market share for energy efficiency and conservation for the residential sector initially, followed by the commercial and industrial sectors. The *Clean Energy States Grant* helped build capacity of state officials responsible for helping to implement both the *Michigan Saves* initiatives and other utility-led programs that aim to achieve long-term energy savings.

Clean Energy States Grant Goals

At the outset of the *Clean Energy States Grant* program, the state was already exploring options for the *Michigan Saves* on-bill financing program for the residential sector. The NGA Center's grant funds were originally proposed to provide support for a state-run administration agency to manage the roll out and implementation of *Michigan Saves*. State officials involved in developing the *Michigan Saves* program recognized that improved training and education of state staff would be needed to ensure a robust roll out of *Michigan Saves* statewide. However, state budget cuts, along with reduced Public Service Commission (PSC) funding dedicated to *Michigan Saves*, virtually eliminated capacity and training funds. As a result, much of the NGA Center's *Clean Energy States Grant* was reprogrammed to support state staff capacity building around energy efficiency.

The NGA Center's *Clean Energy States Grant* helped accomplish the following objectives:

- Launched *Michigan Saves*, along with an administrative structure and initial capital pool to finance the installation of energy efficiency measures and renewable energy systems with no up front cost to utility customers (commercial, industrial, residential). This includes a pilot program in Cherryland, MI; and

- Expanded staff expertise and training to educate state officials from the PSC and Department of Labor, Energy and Economic Growth (DELEG) on advanced energy efficiency programs and audits guidelines. Such training will help them review utility plans designed to increase energy efficiency as well ensure robust implementation of *Michigan Saves*.

Accomplishments and Challenges

With the state economy deteriorating during the grant period, Michigan refined the goals of the *Clean Energy States Grant* to focus the grant resources on improving staff expertise to help advance the development and implementation of the *Michigan Saves* program. Michigan state staff participated in a series of stakeholder advisory group meetings that refined the *Michigan Saves* program design, implementation, financing, and partners. The *Michigan Saves* team held a series of open meetings to solicit feedback from utilities, vendors, lending institutions, energy consumers, and other stakeholder groups. These meetings provided important input for the development of *Michigan Saves*. In addition, they helped better integrate the program with ongoing utility energy efficiency programs.

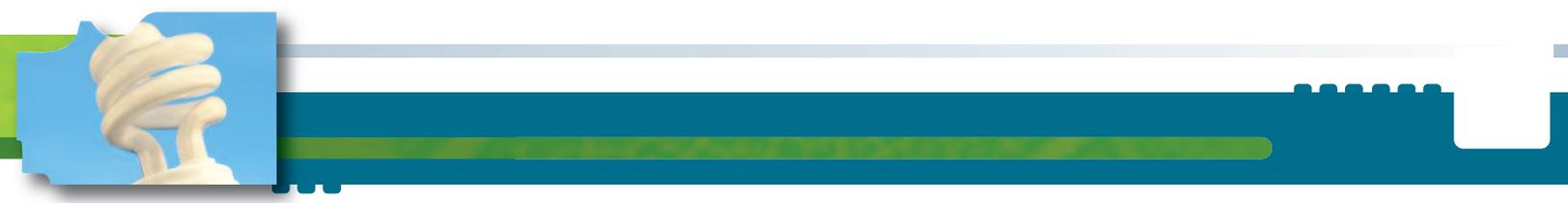
Funding from the NGA Center's *Clean Energy States Grant* program allowed the Michigan staff to attend the National Weatherization Training Conference in Indianapolis, Indiana. This national conference introduced staff to experts from the Building Performance Institute (BPI) program and allowed staff to receive a BPI Residential Building Analyst Training Course. This training educated Michigan staff on advanced weatherization auditing techniques for existing home structures. Training related to financing was identified to help staff target the program to sectors and develop alternative financing programs for markets that are best served by other financing mechanisms.

The core challenge that was unforeseen was initial uncertainty within the state about the effectiveness of the *Michigan Saves* effort and how it would be integrated within other state programs. Second, economic conditions have made it difficult for Michigan staff to obtain training and education related to clean energy financing.

Next Steps

Michigan is preparing to use the statewide capacity and support for *Michigan Saves* built through these training opportunities to move forward in implementing the program. The following goals are anticipated to be achieved:

- Evaluate the recently launched *Michigan Saves* pilot in Cherryland, MI;

- 
- Continue to build movement for *Michigan Saves* through ongoing Stakeholder Advisory Group meetings;
 - Continue to improve coordination the Michigan PSC and DELEG staff; and
 - Develop the Web site and other outreach material (www.michigansaves.org).

While capacity building on energy efficiency is already having a positive impact through *Michigan Saves* programs, Michigan expects the steps listed above to have a direct, quantifiable impact on the its broader job creation and energy savings goals.



MONTANA

IDENTIFYING WIND ENERGY AND TRANSMISSION POTENTIAL

Overview

The state of Montana studied two key aspects of renewable energy development: the location and potential of resources and the ability of the state to integrate renewable power into the grid. Montana's wind resources are potentially the greatest of any state, particularly when looking at wind power greater than Class 3; yet, until a few years ago the state generated only one megawatt (MW) of electricity from wind.

Since participating in the NGA Center's *Clean Energy States Grant* program, Montana has seen its wind generation grow considerably. The state now has over 370 MW of wind energy capacity, with the goal of expanding in the coming years. In order to do so, Montana has begun work on a new transmission scenario. Six private energy developers and the state are formulating a unified transmission vision for connecting all of the state's wind resources into the power grid.

Montana was able to use the *Clean Energy States Grant* to study both of these critical aspects to increasing renewable energy production, including producing several publications on the issues. The state also brought together stakeholders to discuss transmission issues and bolstered its own capacity to measure wind resource potential.

Clean Energy States Grant Goals

Montana's immediate goal was to study its wind resources and transmission needs to encourage the development of wind energy. The state looked primarily at the commercial development of wind farms, along with subsequent or simultaneous transmission development, as the best approach to doing so. While the state initially saw this process as a means to support necessary transmission planning, the wind potential study was an integral part of the overall goals of the grant program.

Montana also was seeking to meet some of its broader goals for clean energy, including reduced greenhouse gas emissions, a reduction in the dependence on foreign energy, and economic

development. Montana expects the wind and transmission development projects to help meet all these goals, particularly in providing economic revitalization to Eastern Montana.

Accomplishments and Challenges

Montana was able to accomplish several tasks during this process, including the publication of several documents. The *Montana Wind Report and Analysis* provided an introductory assessment of Montana's wind potential, several interstate and international transmission projects, and the economic impacts of extensive wind and transmission development. As recently as February 2010, the state printed additional copies of the report in order to meet stakeholder demand.

The Energy Promotion and Development Division of the Montana Department of Commerce also conducted seven meetings of a Montana Transmission Working Group, purchased additional monitoring tools to measure wind resources, and prepared a "Lessons Learned" document centered on the recently-permitted Montana Alberta Tie Line (MATL) project to assist in planning and permitting future transmission projects.

Next Steps

Montana is seeking to continue to develop its wind resources as much as it can while long-term transmission decisions are still being made. The state has a near-term goal of developing all of the wind resources in the state that currently have access to transmission. The capacity of existing transmission is nearly full; although, it is expected that an additional 200-300 megawatts of wind generation can still be added to the existing infrastructure. The transmission scenario group will meet in April 2010 to continue the transmission planning work done previously. The state also expects to begin construction on the MATL in summer 2010 alongside a new 309 megawatt wind farm.

For Montana, the biggest challenge to overcome will be that both wind and transmission development are long-term projects for which current planning will produce benefits years into the future. The state hopes that its planning work through this grant will help speed up the process. Governor Brian Schweitzer envisions 20,000 MW of wind generation capacity installed in Montana in the next 20 years.



NORTH CAROLINA

IMPROVING COMPLIANCE WITH BUILDING ENERGY CODES

Overview

North Carolina focused on addressing compliance with statewide building codes for energy efficiency. While awareness and enforcement of safety codes is common across North Carolina, lack of energy code awareness remains a key barrier to compliance.

The state focused its enforcement and compliance efforts on training local code officials. Many local code officials were either unaware of code requirements, lacked the necessary tools needed to ensure proper code compliance, or simply did not prioritize energy codes. Providing adequate and convenient training to code officials was seen as a first and absolutely necessary step in overcoming the lack of code enforcement.

The *Clean Energy States Grant* allowed North Carolina to hold 22 classroom training sessions throughout the state for code officials, as well as three geographically distributed field trainings. Participation in the grant program also allowed the state to position itself to receive subsequent federal funding for more stringent code adoption and enforcement activities, including \$3 million for code enforcement in affordable housing under the American Recovery and Reinvestment Act (ARRA).

Clean Energy States Grant Goals

Prior to this program, energy code training for local officials was primarily conducted once a year at one of three regional meetings put on by the state building code association. The state found that fewer than 400 code officials attended these trainings. Therefore, the state initially set a modest goal: to hold 20 classroom trainings and reach at least as many of the state's 4,000 code officials as past trainings had (400 officials or 10 percent of the total). North Carolina surpassed its goal by reaching out to over 1,000 officials (25 percent) who attended the various trainings.

The training of code officials is one element of North Carolina's effort to reduce energy use through improved building energy code compliance. The state also used the grant program to support state efforts to evaluate current compliance with the existing state energy code and support the adoption of a newer, more energy-efficient code. Through improved design and compliance, the state hoped to increase the energy efficiency of its code by 30 percent, potentially saving residents \$40 million in energy costs.

Accomplishments and Challenges

With nearly one quarter of the state's building code officials attending, the success of the code training sessions was a clear accomplishment for North Carolina. The state also was able to continuously update training materials and gather information that will be used in ongoing code and program development through surveys distributed at the end of each training session. The field training also allowed code officials to immediately apply their in-class learning to on-the-job situations. Overall, the focus on energy code education for North Carolina's building code officials will lead to improved enforcement and generate significant energy savings for the state.

The energy code training sessions have allowed North Carolina to better understand the barriers that exist in enforcing the energy conservation code. These training sessions spread energy code training statewide, improved awareness of and access to the code for code officials in rural areas, and helped translate code rules into plain language, as code language is often difficult to understand, even for code officials.

Next Steps

North Carolina will build on its grant program by improving compliance with the energy code through a range of short- and long-term steps:

- Develop and adopt a North Carolina Energy Conservation Code that is 30 percent more efficient than the 2006 IECC;
- Provide additional training sessions on the new code for builders, building inspectors, and other stakeholders;
- Develop and implement an energy code official training and certification program;
- Review and revise other state codes to remove loopholes that undermine the intent of the energy conservation code; and
- Make the North Carolina Energy Conservation Code Commentary and training materials available free to inspectors and to the public.

North Carolina expects that closing the gap between the development and enforcement of its energy code will be an effective tool in reducing building energy use, resulting in the attainment of a broad set of energy goals.



UTAH

ASSESSING RENEWABLE ENERGY ZONES

Overview

The state of Utah sought to tackle two important, interrelated issues surrounding the development of clean energy: identifying potential renewable resource zones, and considering transmission needed to deliver energy to load centers in Utah. To help facilitate this process, the Governor's Energy Advisor and the Utah State Energy Program (part of the Department of Natural Resources) developed the Utah Renewable Energy Zone (UREZ) Project. The UREZ Project has three phases, of which the *Clean Energy States Grant* funded all of Phase I and part of Phase II.

The UREZ Phase I Project sought to identify and quantify the resource potential of locations throughout the state for wind, solar, and geothermal energy. This effort produced the *Renewable Energy Zone Resource Identification* report and a unique, interactive Web site that allows users to overlay maps of the identified zones with information such as physical features, current transmission corridors, population, and land ownership and use.

The UREZ Phase II Project began in January 2009, and is ongoing. While Phase I focused on identifying resource locations and capacity for renewable energy development, Phase II explores issues surrounding zone refinement and electric transmission. Funded by both the NGA Center's *Clean Energy State Grant* and funds from the American Recovery and Reinvestment Act (ARRA), Utah has begun to model the costs of developing and connecting 27 separate renewable energy zones with the current electric infrastructure in the state.

Utah used the grant process to complete the first phase and begin the second phase of what is ultimately a three-phase project. When the UREZ project is complete, Utah will have a comprehensive plan for developing its clean energy resources and efficiently connecting renewable power into the grid.

Clean Energy States Grant Goals

The UREZ Phase I Project is helping Utah lay the foundation for meeting its current clean energy objectives. Utah aims to have 20 percent of its electricity sales come from renewable energy sources by 2025. In 2008, only 3 percent of electricity sold in Utah was generated from renewable sources. As are many states, Utah is looking first to its own potential renewable energy resources and sees the resource identification document as an important first step in producing renewable electricity for use within the state and for export. Utah has identified trans-

mission planning and funding as the next challenges in developing new clean energy projects.

Both Phases I and II brought together working groups comprised of state and local government officials, renewable energy developers, utilities, and environmental groups to help ensure stakeholder participation and transparency. The work done in the grant process also benefits Utah's work in the Western Renewable Energy Zone (WREZ) Initiative, a collaborative effort among Western governors to promote renewable energy development throughout the Western Interconnect.

Accomplishments and Challenges

The release of the *Utah Renewable Energy Zones Task Force Phase I Report: Renewable Energy Zone Resource Identification* http://geology.utah.gov/sep/renewable_energy/urez/index.htm was the primary accomplishment of Phase I. It was presented to Governor Jon M. Huntsman, Jr., in January 2009. The work of the UREZ project continues under the administration of Governor Gary R. Herbert. A draft of the initial Phase II study was circulated for review in October 2009. The task force and all working groups will release the completed Phase II study in May 2010. These two studies will inform the need for additional work in a possible Phase III.

The state's emphasis on developing renewable energy resources has begun to have a noticeable impact on the market for private resource development in Utah. Proposals have been submitted to the state for several commercial clean energy projects. The state and its citizens will enjoy both the environmental and economic benefits of renewable energy development.

The state predicted that maintaining stakeholder participation would be a key challenge for both phases of the project. In order to keep involvement at a high level, the state made soliciting feedback and publicly posting documents and meeting information a priority. Utah believes this has helped keep participants, as well as the public, engaged in the process.

Next Steps

Utah is continuing to move forward with Phase II of the UREZ project. In January 2010, a working model was presented to the task force and each of the four working groups (Zone Identification, Economics, Transmission, and Policy) specifically designed to inform energy developers (including utilities) about the costs and physical impacts of renewable energy development in Utah, particularly regarding transmission. Environmental groups within the state have also been given the opportunity to review the models. The UREZ project will be used to inform the public about the cost and location of potential commercial renewable energy development.



Based on the studies in Phase I and II, the need for additional Phase III work will be determined with the goal of developing renewable energy to meet Utah's goals of energy security and economic development.





CONCLUSION

States have continued to show leadership in the push towards a cleaner, more secure energy future. The accomplishments of the 12 grantee states featured in this report provide concrete examples of how states can advance energy efficiency, renewable energy, and clean transportation fuels. The states partnered with universities, utility companies, and private non-profits to maximize the effectiveness of the grant funds and the implementation of the programs themselves. Each state was able to report several key achievements and has a concrete plan for continuing its effort into the future. In several cases, states have been able to leverage additional funding for clean energy projects, an important opportunity given the financial difficulties currently confronting most states.



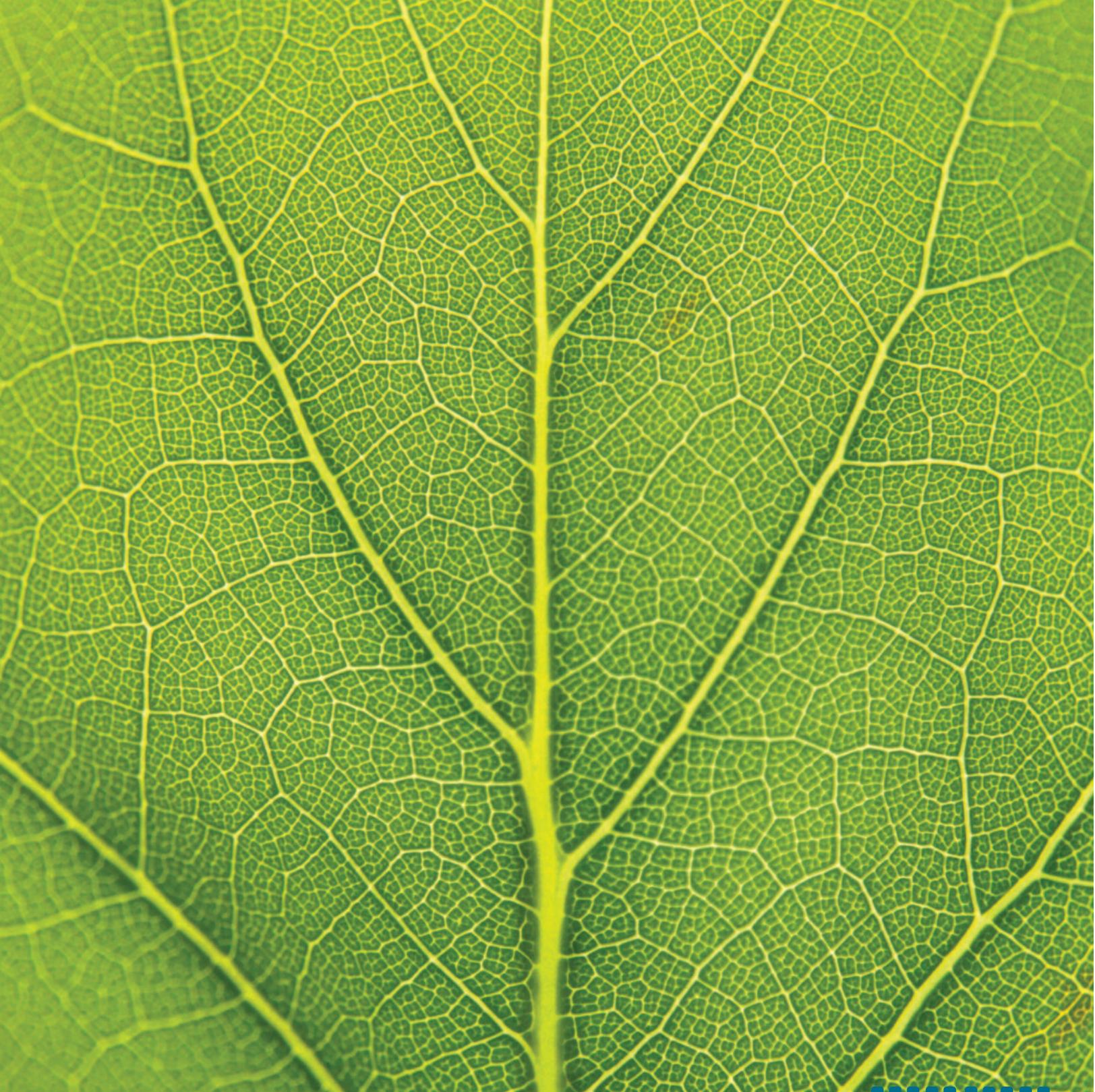


NGA CENTER DIVISIONS

The NGA Center is organized into five divisions with some collaborative projects across all divisions.

- **Economic, Human Services & Workforce** focuses on best practices, policy options, and service delivery improvements across a range of current and emerging issues, including economic development and innovation, workforce development, employment services, research and development policies, and human services for children, youth, low-income families, and people with disabilities.
- **Education** provides information on best practices in early childhood, elementary, secondary, and postsecondary education. Specific issues include common core state standards and assessments; teacher effectiveness; high school redesign; science, technology, engineering and math (STEM) education; postsecondary education attainment, productivity, and accountability; extra learning opportunities; and school readiness.
- **Environment, Energy & Transportation** identifies best practices and provides technical assistance on issues including clean energy for the electricity and transportation sectors, energy and infrastructure financing, green economic development, transportation and land use planning, and clean up and stewardship of nuclear weapons sites.
- **Health** covers a broad range of health financing, service delivery, and coverage issues, including implementation of federal health reforms, quality initiatives, cost-containment policies, health information technology, state public health initiatives, and Medicaid.
- **Homeland Security & Public Safety** supports governors' homeland security and criminal justice policy advisors. This work includes supporting the Governors Homeland Security Advisors Council (GHSAC) and providing technical assistance to a network of governors' criminal justice policy advisors. Issues include emergency preparedness, interoperability, cyber-crime and cyber-security, intelligence coordination, emergency management, sentencing and corrections, forensics, and justice information technology.





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