State Leadership in Clean Energy

2010 AWARDS

Clean Energy States Alliance (CESA) established the *State Leadership in Clean Energy* (SLICE) Awards to recognize state programs and projects that are most effectively accelerating adoption of clean energy technologies and advancing clean energy markets.

State clean energy programs are the clean energy experts and serve as laboratories of change and innovation for clean energy technology deployment. Through the implementation of creative finance, policy, and market initiatives across the country, states have been leading the way in clean energy programs and have been essential drivers of the recent growth in clean energy installations. While many states have established special funds to promote renewable energy and clean energy technologies, others have positioned themselves to quickly take advantage of new federal resources by establishing clean energy programs.

The SLICE awards recognize exemplary programs and projects that demonstrate innovation and effectiveness and that take aggressive steps in advancing clean energy technologies. During the fall of 2010, state funds and agencies across the country nominated programs for *State Leadership in Clean Energy* Awards. A team of six expert judges selected the seven programs from among all the award nominations. The winning entries exemplify the groundbreaking work being done by the states. The awards were presented to the winning programs at the Monocle restaurant in Washington, DC, on October 28, 2010.

Clean Energy States Alliance is pleased to announce the following seven winners of the 2010 *State Leadership in Clean Energy* Awards.

California Energy Commission's (CEC's) Public Interest Energy Research Program Advanced Energy Recovery System (AERS)

The California Energy Commission's (CEC's) Public Interest Energy Research Program (CEC-PIER) has helped to fund a unique and innovative waste-to-energy system at the Gills Onions facility in Oxnard, California. The CEC-funded **Advanced Energy Recovery System** (AERS) project generates heat and power from onion waste that is converted to biogas. The environmental benefits to the community from the AERS project implemented at the Gills facility include the reduction in the amount of disposed biowaste from 150 tons per day to essentially zero and the elimination of up to 14,500 tons of carbon dioxide equivalent emissions per year. The biogas generated by Gills' onion waste is used in two 300-kilowatt fuel cells to produce heat and power for the facility. The system, which offers a payback period of 3-5 years, shall serve as a prototype and demonstration site for other agricultural business operations and food processors.

California Energy Commission's (CEC's) Renewable Energy Transmission Initiative (RETI)

The Massachusetts Clean Energy Center (MassCEC) Community Scale Wind Initiative

The CEC, in its efforts to pursue renewable energy development to achieve the Renewables Portfolio Standard, created a second SLICE-award-winning program: the **Renewable Energy Transmission Initiative** (RETI). RETI serves as a stakeholder collaborative to address the problems associated with the transmission planning process and with permitting renewable-related infrastructure. The first-of-its-kind collaborative seeks to improve renewable energy-related planning and permitting processes by helping to ensure that there is broad stakeholder consensus and support for renewable energy transmission plans and for the competitive renewable energy zones (CREZ). The stakeholder collaborative includes the CEC, California Public Utilities Commission, California Independent System Operator, Northern California Power Agency, Southern California Public Power Authority, and Sacramento Municipal Utility District.

The Massachusetts Clean Energy Center (MassCEC) established the Commonwealth Wind Program in 2009 to complement the state's newly enacted net metering regulations and to assist responsibly sited wind energy projects with successful and timely installations. This year, Commonwealth Wind formed the **Community Scale Wind Initiative** as a competitive grant program to fund feasibility studies and design and construction activities for public and private applicants. Since April 2009, the program has awarded $7.4 million to 32 Feasibility Studies and 15 Design and Construction projects, potentially leading to the development of 65 MW of wind energy and leveraging over $82 million in total wind project investments in 39 municipalities. The first turbines to be constructed as a result of funding from this program are expected to go online in 2010.

New Jersey's Clean Energy Program promotes increased energy efficiency and the use of renewable sources of energy, offering financial incentives, programs, and services for residential, municipal, and commercial customers. To that end, the Clean Energy Program's **Local Government Energy Audit** (LGEA) encourages local government decision makers to undertake cost-effective energy-efficient upgrades in municipal buildings by providing them with a no-cost energy audit. New Jersey colleges and universities and nonprofit organizations may also participate in the free energy audit. The LGEA program subsidizes 100 percent of the audit costs as long as participants implement measures that amount to 25 percent of the cost. While the LGEA program does not result in direct energy savings, it does provide applicants with valuable information about the efficiency of their current equipment and structures and makes recommendations on cost-effective energy efficiency measures.

New Jersey's Clean Energy Program Local Government Energy Audit

Xcel Energy's Renewable Development Fund 's Renewable Energy Kit for Remote Telecom Equipment

With financial assistance from the Xcel Energy's Renewable Development Fund, the West Central Telephone Association (WCTA), a rural Minnesota telephone provider servicing a 600-square-mile service area with phone, internet, and IPTV services, has developed a small wind/solar hybrid **Renewable Energy Kit for Remote Telecom Equipment**. The kits provide backup electricity in remote areas that need reliable services. WCTA developed a monitoring system, installed five test systems, and optimized equipment settings and configurations to find the "sweet spot" for power production. Data were analyzed to verify the kit's technical, financial, and market feasibility as an electrical power solution for challenging, remote applications. The kits are custom-designed to meet the needs of the telecom industry, and now other companies with similar needs can benefit from the groundwork laid by WCTA and Xcel Energy.

The Energy Trust of Oregon, in collaboration with the Southeast Uplift Neighborhood Coalition, created ***Solarize Portland***, a community, group purchase initiative to help residents overcome the financial and logistical barriers to converting to solar energy. *Solarize* covered an average of 70 percent of the above-market cost of solar installation. *Solarize* not only provided the financial incentive but also provided workshops, solar experts, a contractor with set pricing tiers, and free assessments. The project resulted in the installation of solar energy in 120 homes in just six months. The installations added 347 kW of new photovoltaic capacity in Portland; they are estimated to produce 344,500 kWh of electricity per year. The City of Portland is now providing planning, coordination, and implementation support for four additional *Solarize* efforts in Portland neighborhoods.

The Energy Trust of Oregon's *Solarize Portland*

Sacramento Municipal Utility District's Feed-in Tariff Program

In January 2010, Sacramento Municipal Utility District (SMUD) began implementation of one of the first utility **Feed-In-Tariffs** (FITs) in the country, which is based on the value of the electricity to the utility, rather than the underlying costs of the generating technologies. The FIT amount is based upon SMUD's avoided cost of energy, including adders for avoiding GHG emission costs and for avoidance of gas price volatility that would come from purchasing conventional power. For an average, around-the-clock, generating profile, SMUD's FIT amounts to about 11 cents/kWh, while for projects with increased generation in more valuable peak hours, SMUD's FIT will average about 14–15 cents per kWh. By offering standard rates and terms for the purchase of renewable power, as well as from combined heat and power facilities up to 5 MW in size, SMUD has created a market for power purchases from renewable facilities.

Judges

The judges for the *State Leadership in Clean Energy* Awards represent federal agencies, national associations, and other organizations important to the implementation of clean energy. CESA would like to express its sincere thanks to these judges for their time and careful consideration of all the nominated CESA-member programs.

Glen Andersen is an energy policy specialist at the National Conference of State Legislatures' Energy Project. He conducts legislative outreach on issues such as climate change, energy efficiency, and renewable energy. He has worked for over nine years assisting state legislators in their efforts to address energy and environmental concerns, providing them with policy information and analysis and facilitating communication between legislators, regulators, industry, and advocates.

Michael Northrop has played a leading role in encouraging the philanthropic community to address global warming. He directs the sustainable development grantmaking program at the Rockefeller Brothers Fund in New York City, where he focuses on climate change. He is also a lecturer at Yale University's Forestry and Environmental Studies School and at Princeton's Woodrow Wilson School, where he teaches graduate courses on environmental campaigns.

Gilbert Sperling is Program Manager for the Weatherization and Intergovernmental Program of the Office of Energy Efficiency and Renewable Energy at the U.S. Department of Energy. He previously served as Executive Vice President of Verdant Power, which develops projects that generate electricity from water currents of rivers, tides, and manmade waterways, and as Vice President and General Counsel of the Pipeline Research Council International. Earlier, he practiced energy-related law.

Susan Sloan is the Director of State Relations at the American Wind Energy Association (AWEA). She works to promote state policies by engaging members and allied organizations in state and regional efforts. Susan also serves as staff liaison to AWEA's Community Wind Working Group. Prior to joining AWEA, Susan worked for wind and solar interests, promoting renewable energy policies locally in Austin, and then to the Texas legislature when it expanded the Renewable Portfolio Standard and established the transmission Competitive Renewable Energy Zones (CREZ). Susan's public affairs background includes working for public officials in Texas, cable and broadcast media interests at the local, state, and federal levels, and companies in Texas and Hong Kong.

Robert Thresher is a research fellow at the National Renewable Energy Laboratory, where he has been a principal researcher developing early wind technology and an architect of the wind program at NREL. He has more than 40 years of research, development, engineering, and management experience in wind technology, plant engineering, and aerospace systems. His career accomplishments include: developing NREL's wind program from $5 million to $30 million, receiving the H.M. Hubbard Award in recognition of outstanding leadership and initiative in science and technology management in 1990 by the Solar Energy Research Institute and the Midwest Research Institute, receiving the 2004 Pioneer Award from the World Renewable Energy Network at the World Renewable Energy Congress VIII, and more.

Scott Sklar is the president of the Stella Group, LTD. a Washington, D.C.-base strategic marketing and policy firm leveraging projects using advanced batteries and controls, energy efficiency, fuel cells, heat engines, microgeneration, micro hydropower, modular biomass, PV, small wind, and solar thermal. Prior to Stella Group, Scott served for 15 years heading the national trade associations of the solar and biomass electric industries. For nine years, he served as an aide to Senator Jacob Javits (NY).

California Energy Commission

PIER/ADVANCED ENERGY RECOVERY SYSTEM

Program Highlights

- California has helped to fund a sustainable waste-to-energy system for an agricultural product with high sulfur content. The process can easily be adapted for other agricultural and food waste products.
- The biogas in the fuel cells is saving $50,000 to $60,000 per month in electricity purchases and has eliminated the $500,000 annual cost of disposing of the onion waste.
- The AERS project is the first in the nation to produce clean fuel cell energy from onion waste and to develop a gas treatment capable of meeting gas quality specifications for fuel cells.

The California Energy Commission's Public Interest Energy Research program has helped to fund an innovative waste-to-energy system at the Gills Onions facility in Oxnard, California. The Advanced Energy Recovery System (AERS) project at Gills Onions generates heat and power from onion waste as agricultural biogas. The project exemplifies California's leadership role in renewable energy projects, as well as its commitment and willingness to fund collaborative partnerships in emerging waste-to-energy systems. The biogas generated by Gills' onion waste is used to feed two 300-kilowatt fuel cells that produce heat and power for the facility. The system serves as a prototype and demonstration site for other agricultural business operations and food processors. Equally as appealing as the project's novel system is the payback period, estimated at three to five years.

Why Focus on Waste-to-Energy Methane Production?

The Advanced Energy Recovery System provides a model for sustainable energy and waste handling for the agriculture and food processing industries in the U.S. and beyond. The purpose of California Energy Commission (CEC) funding for the waste-to-energy project is to encourage the development of anaerobic digestion and biogas electricity generation that can help California provide renewable energy while reducing its air and groundwater pollution. The environmental benefits to the community from the AERS project implemented at the Gills facility include the reduction in the amount of disposed biowaste from 150 tons per day to essentially zero.

Through the Gills Onions AERS/CEC partnership, researchers developed and implemented a project that eliminates 14,500 tons of carbon dioxide equivalent emissions per year and saves almost 112,000 standard cubic feet of natural gas. While many European countries have made major progress in promoting renewable and sustainable waste-to-energy technologies, the Gills Onions project demonstrates America's leadership in developing value-added

uses for agricultural waste, combining anaerobic digestion with fuel cell power generation technology.

The total cost of the AERS project was $10.8 million, including R&D, start-up, and CEC expenses. Only through creative financing, incentives, and grants was Gills Onions able to develop their waste-to-energy system with a reasonable payback period. Incentives, grants, and awards amounted to $6.8 million, including $500,000 from CEC.

CEC's PIER Program: A Model for Technology Partnerships

Funding for the AERS came specifically through CEC's Public Interest Energy Research (PIER) program, which relies on partnerships to carry out research and develop new projects. The partnerships are used to leverage investments, tap into California's research capabilities at state universities, and build on successful R&D work. PIER provides contracts and grants for research and development of energy technologies. Its Renewable Energy Research area strives to integrate renewable energy technologies into the existing electric grid and to tackle the long-term technical issues that renewable electric facilities currently face. Moreover, PIER advocates renewable energy technologies that make better use of renewable resources that currently pose environmental concerns (e.g. agricultural residues). PIER currently focuses on four objectives to meet California's electricity needs:

- Making improvements at existing renewable energy facilities to provide peak capacity and increased reliability.
- Expanding renewable distributed generation technologies to help provide electricity generation in high-demand areas.
- Developing renewable energy technologies, products, and services that provide affordable electricity.
- Conducting long-term research on advanced renewable technologies.

Implementing the Model

CEC's PIER program awarded $500,000 to Gills Onions for its AERS project to help Gills develop the first system in the nation to produce clean fuel cell energy from onion waste while meeting the triple bottom line of economic, environmental, and social benefits. The biogas generated from the onion waste generates 0.6 MW of electricity to satisfy 75 percent of Gills' baseload power requirements. Additional project funding came from Sempra Energy, the local utility, which provided $2.7 million in self-generation incentive funds. The project was also able to take advantage of the 30 percent federal renewable energy tax credit.

Gills Onions processes almost one million pounds of onions and creates nearly 300,000 pounds of waste each day. Prior to the AERS project, the waste—tops, tails, and peels of the onions—was composted and spread on agricultural fields at a cost of $500,000 per year. Researchers at the University of California, Davis, discovered that digesting the onion solids and the juice yielded good biogas results: the juice yields 70-75 percent by weight through a two-stage screw press extraction method. The remaining solid "cake" is trucked to California farms for cattle feed.

Judges' Comments

CEC's Advanced Energy Recovery System takes advantage of a resource going to waste—in this case, from onion processing—and turns it into a valuable energy source, while eliminating the problem of trucking and disposing of the wast e. The specific scope of project and investment may not be exactly replicable by other states, but the idea is: recycling waste materials and looking at the total supply chain of manufacturing a product to maximize lifecycle efficiency. It's a one-time investment that has an ongoing payback.

About the California Energy Commission

The California Energy Commission is the state's primary energy policy and planning agency. It was created by the Legislature in 1974; its responsibilities include forecasting future energy needs, licensing thermal power plants, promoting energy efficiency, supporting the renewable energy market, administering American Reinvestment and Recovery Act funding through the state energy program, and more. Within the last two years, the most important development in California's energy policy has been two landmark pieces of legislation for energy policy that focus on climate change and transportation.

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Massachusetts Clean Energy Center

COMMONWEALTH WIND'S COMMUNITY SCALE WIND INITIATIVE

Program Highlights

- The Community Scale Wind Initiative addresses the financial challenges of initial site assessments and feasibility studies.
- The Initiative has established a thorough and methodical examination of project risks.
- The Initiative does not require a cost-share for public entities until the design and construction phase.
- Since April 2009, the Initiative has awarded $7.4 million to 32 feasibility studies and 15 design and construction projects, leveraging over $82 million in wind project investments in 39 municipalities. The Initiative's budget for 2010 was $8.9 million.

The Massachusetts Clean Energy Center's (MassCEC) mission is to develop renewable energy generation. To that end, the Commonwealth Wind program was established in 2009 to complement the state's newly enacted net metering regulations and to assist responsibly sited wind energy projects with successful and timely installations to meet Governor Deval Patrick's goal of 2,000 MW of wind power capacity installed in the Commonwealth by 2020. Commonwealth Wind formed the Community Scale Wind Initiative as a competitive grant program to fund feasibility studies as well as design and construction activities for public and private applicants. Since April 2009, the Initiative has awarded $7.4 million to 32 feasibility studies and 15 design and construction projects, potentially leading to the development of 65 MW of wind energy and leveraging over $82 million in total wind project investments in 39 municipalities. The first turbines to be constructed as a result of funding from this program are expected to go online in 2010.

Addressing Opportunities and Challenges to Community Wind

Massachusetts electricity consumers pay some of the highest rates in the nation. Therefore, providing support for projects can be a significant benefit to towns and businesses that would otherwise not be able to benefit from clean energy. Additionally, community-scale wind projects allow the creation of distributed generation resources near load centers that are not possible with larger wind farms, decreasing transmission congestion and benefitting consumers throughout the state.

MASSACHUSETTS CLEAN ENERGY CENTER

The Community Scale Wind Initiative addresses the challenges of developing productive community-scale projects in several ways. At the Feasibility Study phase, MassCEC has established prescriptive and rigorous requirements that ensure comprehensive evaluation of the technical, economic, and environmental risks. For public entities, MassCEC funds 100 percent of the cost of initial site assessments to identify fatal flaws. For both public and private projects, the fatal flaw analysis is a prerequisite for subsequent Feasibility Study Funding. At the Feasibility stage, MassCEC prescribes rigorous requirements to ensure a comprehensive evaluation of risks—technical, economic, and environmental. MassCEC provides funding directly to the client, who then moves the project forward by hiring their own consultants. Quality control is maintained through strict standards and milestones that define when portions of the grant are paid.

Through the Community Scale Wind Initiative, MassCEC also addresses the challenge of funding small wind projects. Municipalities typically have little available cash or tolerance for risk, and private developers of community-scale projects are not usually able to obtain financing based on the expected revenues of the project in the way that developers of commercial-scale wind farms are able to do. The Community Scale Wind Initiative does not require a cost-share for public entities until the design and construction phase and requires only a 20 percent cost-share for private entities. This alleviates the risk of investing until the project proponents are more confident of success.

The Community Scale Wind Initiative's 2010 budget is $8.9 million. Grants are available for site assessment, wind resource monitoring equipment, feasibility studies, and design and construction. MassCEC funds turbines 100 kW and above that serve on-site electrical loads and that generate electricity that qualifies for Massachusetts' net metering provisions. Municipalities, private owners, public agencies, and nonprofit organizations can initiate projects. Typically, grants cover 10 to 20 percent of the installed turbine cost.

Harnessing Public Interest in Community Wind

Massachusetts is leading the nation in innovative energy reform, making clean energy a centerpiece of the state's economic future. The Community Scale Wind Initiative's early, pre-operational support was intentionally designed to complement Massachusetts' new net metering regulations, which created a long-term source of revenue for small projects. Municipally owned projects, where benefits are shared by the entire community, are increasingly popular. The development of single-turbine projects within communities has had a transformative impact on public attitudes toward wind power.

The Community Scale Wind Initiative, together with Massachusetts' new net metering provisions, promote sensible wind energy development in the Commonwealth; both programs emphasize consumer protection and educate developers on the rigorous feasibility study standards, helping to leverage the best use of public funds, develop in-state wind energy expertise, and incrementally transform public attitude toward wind development. The Community Scale Wind Initiative is highly replicable in other states with similar opportunities and challenges.

Judges' Comments

Massachusetts' initiative is an innovative way to move the small wind market—which has huge potential—by dealing with market barriers and technology diffusion to a broad spectrum of users. The program is still young, but it shows new and different thinking, much like a startup. It can ultimately incentivize communities to not only deploy wind but also to accept wind through an incremental, participatory approach.

MASSACHUSETTS CLEAN ENERGY CENTER

About the Massachusetts Clean Energy Center

Massachusetts is leading the way in innovative and comprehensive energy reform that will make clean energy a centerpiece of the Commonwealth's economic future. The Green Jobs Act of 2008 created the Massachusetts Clean Energy Center (MassCEC) to accelerate job growth and economic development in the state's clean energy industry. This new quasi-public agency serves as a clearinghouse and support center for the clean energy sector, making direct investments in new and existing companies, providing assistance to enable companies to access capital and other vital resources for growth, and promoting training programs to build a strong clean energy workforce that capitalizes on the job opportunities created by a vital new industry.

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CleanEnergy States Alliance

2010 AWARD WINNER
State Leadership in Clean Energy

NJ BPU's Clean Energy Program

LOCAL GOVERNMENT ENERGY AUDIT

Program Highlights

- LGEA pays for 100% of an energy audit to government agencies, nonprofits, and state colleges and universities, as long as measures equal to at least 25% of the cost of the audit are implemented by participants.
- The first round of 485 completed audit reports have a cumulative projected savings of 66,540,955 kWh and 2,162,592 therms.
- LGEA has achieved remarkable market penetration, with 22% of eligible entities applying for the program within the first 15 months.
- The program is replicable and does not need to be limited to government agencies or nonprofit organizations.

New Jersey's Clean Energy PROGRAM™
Your Power to Save
njcleanenergy.com
New Jersey Board of Public Utilities

New Jersey's Clean Energy Program promotes increased energy efficiency and the use of renewable sources of energy, offering financial incentives, programs, and services for residential, municipal, and commercial customers. The Clean Energy Program's Local Government Energy Audit (LGEA) encourages local government decision makers to undertake cost-effective energy-efficient upgrades in municipal buildings by providing them with a no-cost energy audit. New Jersey colleges and universities and nonprofit organizations may also participate in the free energy audit. The LGEA subsidizes 100 percent of the audit costs as long as participants implement measures that amount to 25 percent of the cost. While LGEA does not result in direct energy savings, it does provide applicants with valuable information about the efficiency of their current equipment and structures and makes recommendations on cost-effective energy efficiency measures.

Incentivizing Local Governments to Save Energy

Public agencies and nonprofits are often concerned with saving money and reducing costs. LGEA's free service provides participants with useful information on cost-saving measures and solutions for improving energy efficiency. Improving energy efficiency in public buildings helps to lower taxes, reduces the community's carbon footprint, and sets an example for the private sector. Based on completed reports to date, energy audit reports show an average projected electric savings of 131,000 kWh per building and an estimated gas savings of 4,000 therms per building.

LGEA is unique in its incentive structure, which provides incentives not only for participants to learn more about the energy efficiency of their buildings but also for participants to make energy efficiency improvements after the audit. The requirement to spend at least 25 percent of the cost of the audit on implementing recommendations encourages participants to invest in the measures.

The New Jersey Model

New Jersey has implemented numerous successful initiatives to reduce the state's peak energy demand. Its programs are comprehensive, providing both technical and financial assistance to program participants, and are often able to provide monetary incentives, financing tools, and rebate payments to participants. LGEA's no-cost energy audit embraces the comprehensive strategies of New Jersey's Clean Energy Program.

LGEA operates at 30 percent of its total budget, leaving the remaining 70 percent available to program participants. Funding for the program was received from New Jersey's Societal Benefit Charge, and additional funding is expected from the American Recovery and Reinvestment Act. The 2010 budget is nearly fifteen million dollars.

Within the first 15 months, 22 percent of eligible participants applied for the audit. The first round of 485 audit reports approved by the program has projected 66,540,955 kWh and 2,162,592 therms of savings in total.

Steps to Success

LGEA maximizes cost-effectiveness in several ways. It provides participants with an investment-grade energy audit that includes a prioritization of energy-saving measures that provide the greatest return. Additionally, the State prequalified five firms to perform the audits. Lastly, LGEA provides 100 percent payment upon receipt and approval of the audit report.

Participants supply applications to the program, including information about the buildings to be audited. LGEA representatives help participants develop their scope of work, decide if each building should be audited, and assist in evaluating proposals from the prequalified auditors. Upon approval, the auditor performs the energy audit and produces a report. The report is submitted to LGEA, which reviews and approves the audit before providing the incentive payment to the program participant. However, the participant must commit to implementing at least 25 percent of the recommended measures before the incentive payment is paid out.

Changes to finesse the program and improve its effectiveness since inception include introduction of a program cap structure based on the square footage of audited buildings, expansion of eligibility to nonprofits and state colleges and universities, and changing the two-step incentive structure to a single, 100% incentive paid upon receipt and approval of the audit report. Prequalifying auditing firms and requiring terms and minimum scope of work in their contracts is key to the success and cost-effectiveness of the program.

Judges' Comments

There are a number of barriers that prevent government entities from going forward with energy upgrades, and the BPU's audit program seems to be a fairly effective approach to address these. It has helped focus governments on energy efficiency and provided them with the wherewithal to undertake audits, so they can make the financial case for the public benefits and cost-effectiveness of making the necessary investments.

New Jersey's Clean Energy PROGRAM™
Your Power to Save

About New Jersey's Clean Energy Program

In 2003, the New Jersey Board of Public Utilities established the Office of Clean Energy to administer New Jersey's Clean Energy Program (NJCEP). Representatives from government and industry, energy experts, public interest groups, and academicians helped establish a Clean Energy Council to engage stakeholders in NJCEP's development and provide input to the BPU regarding the design, budgets, objectives, goals, administration, and evaluation of the program. NJCEP promotes increased energy efficiency and the use of clean, renewable sources of energy including solar, wind, geothermal, and sustainable biomass. The results for New Jersey are a stronger economy, less pollution, lower costs, and reduced demand for electricity. NJCEP offers financial incentives, programs, and services for residential, commercial, and municipal customers.

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Program Highlights

- California has developed an innovative, collaborative, proactive approach to renewable energy transmission planning.
- The RETI stakeholder collaborative has influenced the CAISO's transmission planning process and the CPUC's long-term generation procurement process for renewable energy.
- RETI is a replicable approach that already is being implemented by the Western Governors Association and the Western Electricity Coordinating Council under the Western Renewable Energy Zone Initiative.

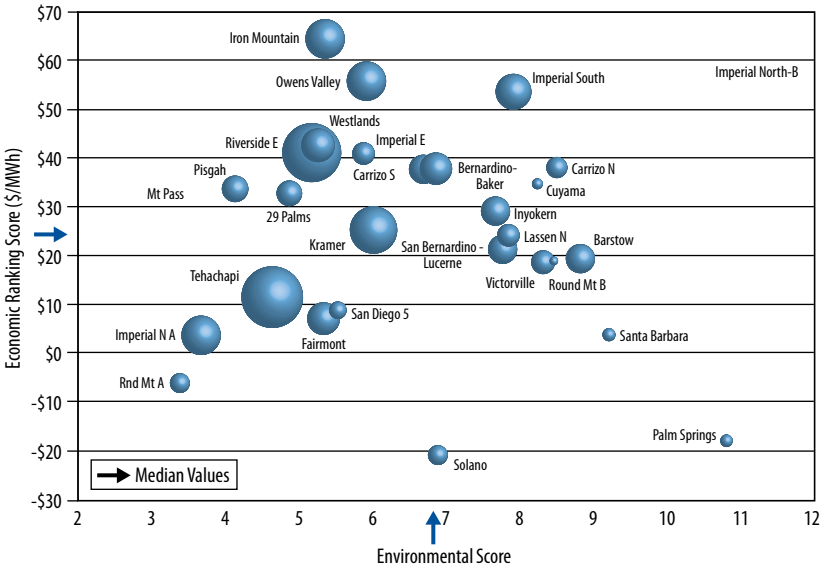
California Energy Commission

RENEWABLE ENERGY TRANSMISSION INITIATIVE

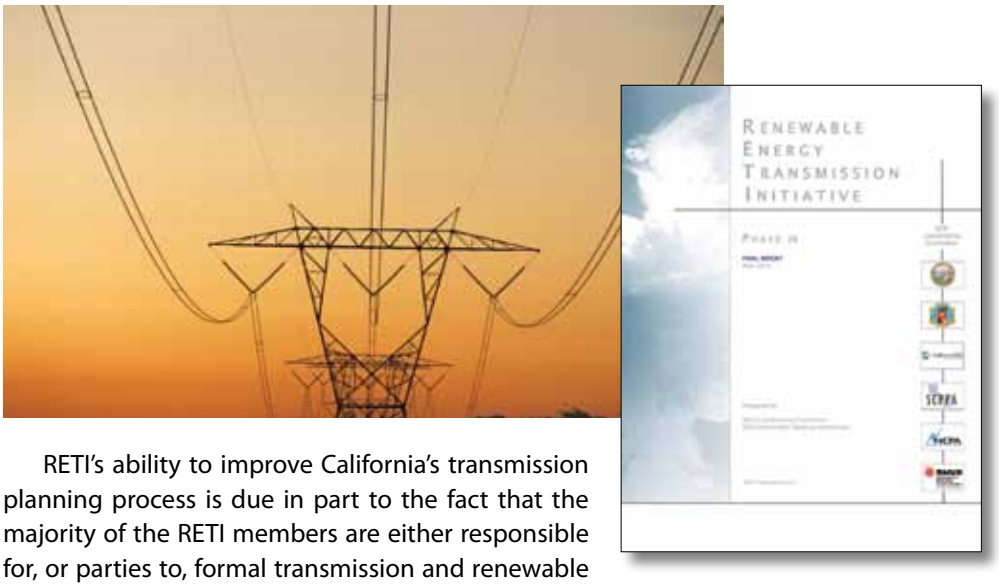
The California Energy Commission (CEC), in collaboration with the California Public Utilities Commission (CPUC), California Independent System Operator (CAISO), Northern California Power Agency, Southern California Public Power Authority, and the Sacramento Municipal Utility District, formed the Renewable Energy Transmission Initiative (RETI) as an informal stakeholder collaborative to develop a conceptual statewide transmission plan that minimizes environmental impacts and economic costs and supports California's 33 percent Renewables Portfolio Standard goals. Though RETI does not have administrative or legal standing, its value lies in its ability to influence formal processes and procedures related to renewable energy infrastructure planning and permitting. The 30-member stakeholder collaborative includes state, federal, and local agencies; investor and publicly owned electric utilities; environmental organizations; renewable generation developers; ratepayer advocates; Native American tribal representatives; and others.

The Need for a Collaborative Planning Process

A new, collaborative approach to renewable energy planning and permitting in California was essential to address problems associated with the transmission planning process and with permitting renewable-related infrastructure. For example, transmission planning in California has historically lacked a statewide approach; and stakeholder participation in transmission planning has not been adequately emphasized, with the result that transmission plans have lacked broad support, contributing to permitting issues and failures. Transmission planning must also now incorporate renewables, increasing the complexity of the planning and permitting processes, because most renewable energy sites are remotely located and therefore require lengthy transmission lines to interconnect to the transmission grid.



This chart shows revised CREZ assessments in terms of relative economic cost and environmental concerns per unit energy produced. CREZ to the left in this chart are expected to have fewer environmental concerns per unit energy production, and CREZ toward the bottom are expected to have lower cost/higher economic value per unit energy.



RETI's ability to improve California's transmission planning process is due in part to the fact that the majority of the RETI members are either responsible for, or parties to, formal transmission and renewable generation planning and permitting. Every major stakeholder group with an interest in renewable energy development in California is represented in the collaborative. Without new and upgraded transmission infrastructure, central station renewable generation could be stranded, market support would dry up, and advancement of clean technologies would be hampered.

The RETI stakeholder collaborative benefits the public as it encourages support for renewable technologies and seeks to improve public perceptions of renewable infrastructure needs.

Implementing RETI

The CEC first implemented a strategy to address the lack of broad stakeholder support for transmission plans by funding the Imperial Valley and Tehachapi Implementation Groups contract in 2005. The contract, for two specific renewable areas of California, marked the first use of a stakeholder collaborative to conduct transmission planning, and it was essentially the precursor to RETI, which launched in July 2007. The CEC has spent $1.3 million in RETI facilitation and technical support, while the CPUC has contributed another $1.1 million; other members have donated their staff resources in active participation in the collaborative.

Preliminary Results

While it is difficult to quantify results, billions of dollars are necessary to transform California's electric system from fossil fuels to renewables. Broad stakeholder and public support—which RETI is seeking to improve—is essential and this approach has the potential to reduce costly litigation and delays during the permitting process. RETI has been instrumental in fostering consolidated electric utility transmission planning that will directly feed into the CAISO transmission planning process. In addition, RETI has shaped the CPUC's long-term generation procurement process for renewable energy.

Judges' Comments

RETI is a great conceptual model that can link together multiple states and stakeholders—which would be a big step forward in transmission planning. The Initiative exhibits leadership and innovation and is a commendable activity that ought to be emulated by almost every state, at least internally, to deal head-on with one of the major issues our nation is facing.

About the California Energy Commission

The California Energy Commission is the state's primary energy policy and planning agency. It was created by the Legislature in 1974; its responsibilities include forecasting future energy needs, licensing thermal power plants, promoting energy efficiency, supporting the renewable energy market, administering the American Reinvestment and Recovery Act funding through the state energy program, and more. Within the last two years, the most important development in California's energy policy has been two landmark pieces of legislation for energy policy that focus on climate change and transportation.

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CleanEnergy States Alliance

2010 AWARD WINNER
State Leadership in Clean Energy

Program Highlights

- The payback period for the remote kits is 10-15 years.
- Each remote kit can reduce coal-based consumption by 2,245 kWh per year and carbon dioxide emissions by 4,500 pounds per year.
- WCTA has developed custom kits for the telecom industry.
- The project has been recognized by U.S. Senator Amy Klobuchar during the Green Jobs Tour and received recognition through the Carbon Buster Award.

Xcel Energy®

Renewable Energy Kit for Remote Telecom Equipment

XCEL ENERGY RENEWABLE DEVELOPMENT FUND

With funding from Xcel Energy's Renewable Development Fund (RDF), West Central Telephone Association (WCTA), a rural Minnesota telephone provider servicing a 600-square-mile service area with phone, internet, and IPTV services, has developed a small wind/solar hybrid renewable energy kit for distributed generation. The kits can provide reliable electricity in remote areas that need essential services such as telecommunications. WCTA developed a monitoring system, installed five test systems, and optimized equipment settings and configurations to find the "sweet spot" for power production. Data were analyzed to verify the kit's technical, financial, and market feasibility as an electrical power solution for challenging, remote applications.

The Need for Renewable, Remote Power Kits

WCTA, a small rural telecom, has more than 100 remote equipment nodes that require constant power. WCTA recognized that the future demand on energy was not going to be met by current transmission lines and the current electricity industry. It approached the distributed generation system as a viable alternative for providing clean energy. Furthermore, WCTA seized the opportunity to create a hybrid kit to meet its energy needs, while helping manufacturers develop new and innovative products that can address a variety of applications, from highway department signals and lights to power at cabins and other off-grid locations.

The remote power kits can each reduce coal-based electricity consumption by an estimated 2,245 kWh/year. Additionally, the kits have the potential to fortify telecommunications infrastructure during power outages, help the U.S. meet the goals set in the FCC's 2010 National Broadband Plan to create sustainable infrastructure, provide a new market opportunity and green jobs in rural areas, and provide renewable energy and carbon credits to

utilities to help reach federal and state mandates.

The renewable power remote kits help WCTA provide energy independence, create local jobs, and participate in a green economy. WCTA's kits are a sound financial investment with an expected payback of 10-15 years, using current rebates and incentives. Grants from Xcel Energy's Renewable Development Fund and other foundations greatly reduced WCTA's financial risk.

The West Central Telephone Association Solution

The lack of standardization in small wind turbine power ratings, the lack of a governing body to verify turbine and component claims, the incompatibility of various system components, and a high degree of technical complexity without decipherable user interfaces and/or documentation made it necessary for WCTA to create its own solution. Working with developers of solar monitoring software, WCTA created a cost-effective, customized solution to remotely monitor and record wind data and to pair solar, wind, and battery storage technologies. This independent solution enabled WCTA to keep track of wind data and optimize system configurations. The custom-designed kit is now available for other companies and can be used for both solar and wind.

The project consisted of two phases: preliminary research and development; and demonstration and testing. Phase I was funded by WCTA; Phase II was funded through Xcel Energy's RDF and consisted of setting up five test sites and demonstrating the kits.

Recipe for Success

This project was successful in part due to WCTA's ability to work the project into a business plan and develop future plans for franchising. A full economic feasibility study was done to determine cost-effectiveness. Even without the Xcel Energy RDF funding, the payback period of the kits remains within the life expectancy of the equipment.

Distributed generation appeared to be the best alternative for building and maintaining a reliable rural communications system, with clear ancillary public and environmental benefits. WCTA realized during this effort that there is real demand for the kits *when they are offered by credible installers*, a role rural telcos are well suited to serve. And, now that the kits have been custom-designed to meet the needs of the telecom industry, other companies with similar needs can benefit from the groundwork laid by WCTA and Xcel Energy.

Judges' Comments

There are many renewable energy installations across the U.S. where the economics only work because of subsidies; yet, there's a whole sector of the economy involving critical infrastructure where these technologies are not only cost effective but also have immense public benefit—think of Hurricane Katrina, for example. This highly replicable program is encouraging both innovation and the potential development of new products and businesses.

Xcel Energy®

About the Xcel Energy Renewable Development Fund

The Xcel Energy Renewable Development Fund (RDF) is financed by Xcel Energy ratepayers to promote the startup, expansion, and attraction of renewable energy projects and companies in the Xcel Energy service area. It also stimulates research and development into renewable energy technologies. Both efforts are designed to increase the market penetration of renewable energy resources at reasonable costs.

Project funding to date has been in the form of grants and renewable production incentive (REPI) payments. RDF grants have been awarded to research universities, nonprofit organizations, commercial businesses, and governmental agencies. Grants support commercial technologies and research and development. REPI payments are made to qualifying small wind, biogas, and hydroelectric projects operating and generating electricity in Minnesota.

For more information

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CleanEnergy States Alliance

2010 AWARD WINNER
State Leadership in Clean Energy

Solarize Portland

ENERGY TRUST OF OREGON

Program Highlights

- *Solarize Portland* is a successful new program delivery method for creating demand and installation of solar technology.
- In six months, 120 solar electric systems were installed through *Solarize* by reducing the primary market barriers for homeowners—more than three times the number of installations completed in Portland in 2008.
- *Solarize* effectively partnered with a local nonprofit experienced in engaging citizens.
- Energy Trust provided participants standard program incentives of $2.25/watt.
- Buzz generated by *Solarize Portland* applied downward pressure on PV system prices and contributed to a 320% increase in area non-*Solarize* installations during the project timeline.

EnergyTrust of Oregon

Energy Trust of Oregon, in collaboration with the Southeast Uplift Neighborhood Coalition, created *Solarize Portland*, a community, group purchase initiative to help residents overcome the financial and logistical barriers to installing solar energy systems. *Solarize* resulted in the installation of solar energy on 120 Portland homes in just six months—more than three times the number of systems installed in the city in 2008. The group purchasing and RFP process delivered costs 20% lower than the average price in Portland at the time. *Solarize* not only provided an attractive financial proposition but also provided workshops, solar experts, a contractor with set pricing tiers, and free assessments. The 120 installations added 347 kW of new photovoltaic capacity in Portland; they are estimated to produce 344,500 kWh of electricity per year.

The Need for a Community-Led Program

The barriers to installing residential photovoltaic systems can be many: cost, discomfort with contractors and the sales process, unfamiliarity with solar technology, financial complexity, and inertia. In Portland, the pace of installations had been relatively slow (38 in all of 2008), and the price of photovoltaic systems had been high compared with the rest of the state. In addition, the timeline required to move a potential solar customer from interest to installation is often very long: a 2007 market study determined that most Oregonians thought about installing solar for over two years before they finally took action. *Solarize* was able to draw many residents to its program and substantially reduce the lengthy decision-making and installation timeline by removing or otherwise addressing many of these barriers. *Solarize* provided free site assessments and offered an affordable, set price for program participants through a single installer. In addition, Southeast Uplift engaged citizens directly, giving homeowners the opportunity to determine how energy is produced within their community.

© Energy Trust Oregon

Recipe for Success

Solarize was designed to be simple to engage and enroll in. It far surpassed its goal of enrolling 50 homeowners and achieving 25 installations through the program. Critical to the success of the program was the collaboration of Energy Trust, a statewide nonprofit organization with deep solar expertise and market familiarity, with Southeast Uplift, a local community organization experienced in engaging citizens and implementing community initiatives. This unique and collaborative program featured the following key elements:

- Grassroots outreach and promotion by neighborhood volunteers
- Competitively selected contractor with set pricing tiers
- Easy enrollment and participation process
- Educational workshops
- Free site assessments for all enrollees to determine suitability
- Energy Trust incentive of $2.25/watt, plus state and federal tax credits
- Limited-time enrollment period
- *Solarize* resulted in 120 solar electric installations within six months and provided 18 professional jobs.

Implementing the Model

Energy Trust provided its standard residential solar electric incentive at that time of $2.25/watt to the participants of the *Solarize Portland* project, with an average per-project incentive of $6,300. At the installed cost of $6.80/watt for *Solarize* participants, Energy Trust's incentive covered an average of 70% of the above-market cost of a given installation, after state and federal tax credits. Energy Trust claimed 15 out of 20 years' of Renewable Energy Certificates (RECs) for each installation, for a total anticipated acquisition of approximately 4,900 RECs.

Given the unique collaboration, delivery costs for the project were modest. One Energy Trust staff person led Energy Trust's portion of the project and delivered several educational workshops as part of the organization's normal program activities. Outreach was driven by Southeast Uplift and a corps of dedicated volunteers from its affiliated neighborhoods.

By helping develop *Solarize Portland,* Energy Trust was part of creating a successful new program delivery method consisting of five simple elements:

- RFP to enable bulk pricing
- Collaboration with a trusted, sponsoring organization
- An easy participation process
- Simple educational plan
- Limited-time signup period

Solarize Portland and the success of subsequent *Solarize* projects have demonstrated the effectiveness of the model in creating demand and driving installations. The City of Portland, a U.S. Department of Energy Solar America City, is providing planning, coordination, and implementation support for four additional *Solarize* efforts in Portland neighborhoods. Energy Trust's subsequent support of *Solarize Pendleton,* a project in the rural city of Pendleton, Oregon, and a similar project for employees of Columbia Sportswear Company, shows that the approach is highly replicable and can be adapted to work in a variety of settings.

Judges' Comments

Portland might not have the most sunlight, but it's been able to move ahead with a major solar initiative in Solarize Portland. This grassroots effort, facilitated with a partnership between the statewide nonprofit and local neighborhoods, moved ahead in a really short time, using a relatively modest subsidy to command a good price for residents. The model is potentially replicable by communities across the U.S., and is particularly important to study in light of declining state incentives and challenges to the PACE residential financing program.

Energy Trust of Oregon

About Energy Trust of Oregon

Energy Trust of Oregon is an independent nonprofit organization dedicated to helping Oregonians benefit from saving energy and generating renewable energy. Its services, cash incentives, and energy solutions have helped participating customers of Portland General Electric, Pacific Power, NW Natural, and Cascade Natural Gas save nearly $600 million on energy bills. Its work helps keep energy costs as low as possible and builds a sustainable energy future.

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Program Highlights

- SMUD's FIT program is the only successful FIT based on the value of electricity to the utility, and is one of the earliest FIT structures for CHP in the U.S.
- The FIT's application process is streamlined and simple; initial applications were sufficient to fill up the entire 100 MW of available capacity.
- The average payment for power will be 14-15¢/ kWh, an estimated $28 million per year.
- The FIT supports the renewable energy goals of California and promotes renewable energy development within the Sacramento area.

SMUD

Sacramento Municipal Utility District

SMUD FEED-IN TARIFF PROGRAM

In January 2010, Sacramento Municipal Utility District (SMUD) began implementation of one of the first utility Feed-In-Tariffs (FIT) in the country for renewables, based on the value of the electricity to the utility, rather than the underlying costs of the generating technologies. The FIT amount is based upon SMUD's avoided cost of energy, including adders for avoiding GHG emissions costs and for avoidance of gas price volatility that would come from purchasing conventional power. For an average, around-the-clock, generating profile, SMUD's FIT amounts to about 11 cents/kWh, while for projects with increased generation in more valuable peak hours, SMUD's FIT will average about 14–15 cents per kWh.

Why a Feed-In Tariff?

Sacramento Municipal Utility District holds environmental leadership as one of its core values. The FIT program advances SMUD's commitment to empowering its customers with solutions and options that increase energy efficiency, protect the environment, and lower costs. Additionally, SMUD is committed to providing leadership in the reduction of the region's total emissions of greenhouse gases and to supporting climate change policies and initiatives. SMUD's FIT Program advances this philosophy in the distributed renewable generation arena.

SMUD's Feed-In Tariff program was developed prior to Senate Bill (SB) 32, which became effective at the beginning of 2010 and legislated a feed-in tariff be offered to generators in an amount based on a utility's proportionate share of the total demand in California. SMUD's share on this basis is 33.5 MW. The legislation also set a maximum per generator of 3 MW. To accommodate the variation between SB32 and its own requirements, SMUD set aside 33.5 MW of the 100 MW allotted under the program for renewable energy systems ≤ 3MW.

Prior to the FIT program, large-scale distributed generation projects were not being developed due to the difficulty in competing with utility-scale generation. By offering standard rates and terms for the purchase of renewable power, as well as from combined heat and power facilities up to 5 MW in size, SMUD has created a market for power purchases from renewable facilities. Establishing the FIT program based on the value of energy to SMUD has made it easier to expand the program without undue impacts on SMUD's rates.

Additionally, the FIT program is likely to provide a large-scale deployment of PV technology within the SMUD area.

The SMUD Model

SMUD's FIT application process was developed to be streamlined and simple. Eligible applicants must have renewable or combined heat and power generating projects less than 5 MW in size and must be able to be connected to SMUD's distribution system, rather than to the transmission system. The program provides standard rates and contract terms for the purchase of renewable energy, on a time of use basis. SMUD estimates that the annual payment for power from FIT projects will be $28 million per year. The average payment for power to PV projects is estimated to be in the range of 14-15¢/ kWh. These rates are based on

SMUD's avoided costs such as avoided long-term brown energy purchases, avoided generation investment, avoided greenhouse gas mitigation, etc.

SMUD's FIT is one of the earliest implementations of a feed-in tariff for renewables and is the only successful FIT based on the value of energy to the utility, rather than on the technology costs of the renewable energy system.

Implementing the FIT

SMUD's FIT program has an initial cumulative limit of 100 MW, and 66.5 MW of eligible projects must be less than 5 MW in size while 33.5 MW of projects must be less than 3 MW. Applicants fill out a simple, one-page application form, provide an interconnection form, and include a reservation deposit of $20/kW and an interconnection review fee. On its first day of operation, the FIT program received enough applications to fill up its 100 MW capacity, with all of the applications for solar PV.

The FIT program provides standard rates and contract terms for the purchase of energy. The program benefits will be measured by the megawatts of Renewable Energy Credits (RECs) produced, the percentage of SMUD's renewable energy portfolio provided by the FIT, and, if applicable, the megawatts of installed, efficient generating capacity from combined heat and power projects.

Judges' Comments

This structure represents a model for successfully deploying the feed-in tariff model in the U.S. It's an important model for the renewable energy policy world to consider, in light of recent challenges to FIT models that are based on technology costs. Time will reveal the success of SMUD's model—but this gem in the rough has the potential to drive a lot of renewable online in the near future.

SMUD

About the Sacramento Municipal Utility District

The Sacramento Municipal Utility District is a community-owned electric utility governed by a seven-member Board of Directors. Serving 592,000 customers and a total population of about 1.1 million, SMUD is the sixth-largest public utility in the country. SMUD has been providing public power to the Sacramento region since 1946. The SMUD Board's vision is to empower its customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve its region. SMUD's energy efficiency and renewable energy programs are recognized nationally for their leadership and innovation.

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