

**2006-2007 Solar for Schools
Attachment F:
Innovation Award Recipients**



Presented at the
Interstate Renewable Energy Council
Annual Meeting
September 24, 2007
Long Beach, California

2007 Innovation Award Recipients

American Solar Energy Society
Wisconsin Public Power, Inc.
Atlantic County Utilities Authority
Cape Light Compact
Texas State Energy Conservation Office

2007 Special Recognition Award Recipients

Senator Rob Garagiola - Maryland
Delegate Sue Hecht - Maryland
Jim Callihan - Renewable Energy Access
Ken Sheinkopf - The Sheinkopf Group
Bill Guiney - Johnson Controls
Roger Ebbage - Lane Community College

2007 IREC Innovation Award Winners

Each year, the Interstate Renewable Energy Council recognizes state and local governments, schools, and non profits and community groups that have implemented innovative projects and programs during the previous year, which promote and accelerate the adoption of renewable energy technologies. Each project, in the judgment of IREC and independent judges, has demonstrated a measurable positive impact that is replicable and innovative. The Interstate Renewable Energy Council is pleased to announce the winners for 2007.

Tackling Climate Change in the U.S.:

Potential Carbon Emissions Reductions from Energy Efficiency and Renewable Energy by 2030

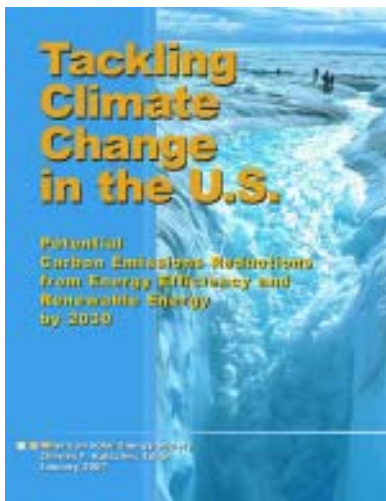
Lead Partner: American Solar Energy Society

SOLAR 2006, the American Solar Energy Society's 35th annual conference, focused on "Renewable Energy: Key to Climate Recovery." The conference featured a special track of nine invited presentations by experts who described how energy efficiency and renewable energy technologies **could** mitigate climate change. These experts estimated the potential for these technologies to reduce carbon dioxide emissions by the years 2015 and 2030.

Nine areas were examined: overall energy efficiency, building energy, transportation energy, concentrating solar power, photovoltaics, wind power, biomass, biofuels and geothermal power. Each expert was asked to explore the current and expected future cost and supply, and the carbon reduction potential. All nine papers underwent rigorous peer review and were subsequently published in a 218-page report.

The report shows that the combined contributions for all technologies for the year 2030 would yield about 1.2 billion metric tons of carbon per year, which is on target to achieve the emissions reductions needed by mid-century. The report shows that renewable electricity contribution can result in about 40 percent of the amount of U.S. electricity that IEA projects for 2030. After accounting for the electricity savings obtainable from efficiency measures, this amount of renewables could provide about 50 percent of the remaining national electricity requirement.

Since its release, dozens of presentations of the data have been given across the country, as well as at the U.N. Sustainability meeting, and the report



Available as a free download at www.ases.org/climatechange

is regularly quoted as definitive research on how energy efficiency and renewable energy combined can prevent the catastrophic consequences of global warming.

Much of the response to the widespread distribution of Al Gore's movie *An Inconvenient Truth* has been despair about the inability for mankind to effectively address global warming. The prevalent attitude has been that we simply cannot, with today's technology, do anything significant to reduce the greenhouse gases that cause global warming. A number of scientists, however, felt that their particular technology could play a role in lowering the projected increases of carbon in the atmosphere. Chuck Kutscher, the principal author and organizer of the report, identified the need for a broader perspective on climate change – a way to provide hope, based on a suite of energy efficiency and renewable energy technologies, which, if vigorously and broadly deployed, can significantly impact the millions of tons of carbon the U.S. adds to the atmosphere each year. ❖



WPPI's Alternative Vehicles Campaign

Lead Partner: Wisconsin Public Power, Inc. (WPPI)

As part of a campaign to promote and advance new technologies and to increase electric conservation, increased efficiency and renewable energy awareness, WPPI launched a campaign to promote increased use of alternative fuel vehicles.

WPPI converted two Toyota Prius vehicles to plug-in hybrid electric vehicles (PHEV) and added them to its corporate fleet. These vehicles are like any other standard Prius, except they are fitted with a second, larger battery that is charged by plugging into a standard wall outlet, and can travel up to 30 miles on electricity alone before utilizing the Prius' standard, gas-electric hybrid engine. The result: a vehicle capable of 100-plus miles per gallon.

When garaged at WPPI's corporate facility, the vehicle's batteries are charged with 100% renewable energy. WPPI purchases all of its energy for its office facility from renewable sources. In addition, two 2.6 kilowatt dual-axis tracker photovoltaic panels are being installed on the WPPI campus to provide additional clean energy.

Transportation in the U.S. consumes 65% of the oil that is imported. The use of PHEVs can help reduce U.S. dependence on oil imports. Depending heavily on foreign oil places the U.S. in a vulnerable position. Alternative vehicles can help contribute to greater energy security.

WPPI is committed to being a leader in helping to control energy costs for customers while aggressively pursuing conservation and energy efficiency. As part of that commitment, they are working to put this innovative, proven technology on the road today. In addition to their own plug-in hybrids, WPPI provides grants of up to \$12,000 to its municipal electric utility members to defray the cost of purchasing neighborhood electric (NEV) and hybrid gasoline-electric vehicles and for converting standard hybrid electric vehicles to plug-in hybrid electric vehicles (PHEV).

Why would a municipal electric company support emerging PHEV technology? WPPI recognizes the potential for PHEVs to help make better use of the existing electric grid's capacity and to help control energy costs for consumers by allowing them to charge overnight, when electric demand is low.

Although PHEVs are not yet widely available, WPPI's vehicles are demonstrating that plug-in vehicle technology is a solution automakers can and should develop today using existing technology and no new infrastructure. ❖



One of WPPI's PHEV fleet featuring a design from its current renewable energy marketing campaign.



Jean Mickelson of Black River Falls Municipal Utilities tries out the new Columbia ParCar purchased through a grant from WPPI.

Hybrid Wind and Solar Energy Powered Wastewater Treatment Facility

Lead Partner: Atlantic County Utilities Authority (ACUA)

Other Project Partners: Community Energy, World Water & Power Corporation and Altermity Power

The Atlantic County Utilities Authority incorporated clean, renewable energy to power its Wastewater Treatment Facility in Atlantic City. A total of five 1.6-megawatt wind turbines capable of producing up to 8 megawatts of energy were constructed at the facility and were fully operational in January 2006. The \$12.5 million project is owned and operated by a private company and constructed by Community Energy, Inc. The ACUA agreed to purchase electricity from the wind farm at a fixed rate of 7.95 cents per kilowatt-hour for 20 years. The ACUA also receives \$15,000 per year in rental fees for the turbines' pad sites.

In addition, a 500-kilowatt solar photovoltaic system was completed in May 2006. The ACUA owns and operates the photovoltaic system, which was constructed by World Water & Power Corporation and Altermity Power.

Wastewater treatment facilities have high energy demands. The ACUA site cost more than \$2.8 million to operate in 2005. This represents nearly 23 percent of the ACUA's wastewater budget. This project will help maintain a stable rate for ACUA customers.

To date, the combined solar and wind project has saved the ACUA approximately \$526,000 a year in electric costs, while displacing 24,000 barrels of crude oil. This is equivalent to removing 2,234

Continued on next page

cars from the road and planting 265,000 trees.

By incorporating clean renewable energy into its operations the ACUA has significantly reduced its dependence on fossil fuels and increased its energy security. The project is proving that renewable energy is a viable source of power that has a place in all sectors — including government and industry.



ACUA Wind turbine and solar array

Over 4000 people have visited the facility since it began operating, including government officials from countries in southern Africa, Sri Lanka, Massachusetts, Delaware and Maryland; students of all ages; and the general community. Many come to learn how they can start to implement clean energy for their nation, state, school, business or home. According to Monica Czaplinski, ACUA Communications Manager, nearly 32 million people visit Atlantic City each year, many of whom will see the wind farm. “It’s hard to miss!” she said.

Education and outreach are top priorities at the ACUA and share their renewable experience with others. The ACUA has always been an educational destination for local schools who visit its recycling facility and landfill gas-to-electricity project. With the completion of the wind farm, tours are available for the wind farm and solar project. The ACUA also conducts presentations at New Jersey schools, civic groups and other venues. An educational kiosk was constructed on site that provides information on the wind farm and all the renewable energy projects in which the ACUA is involved.



ACUA wind power project at the Atlantic City wastewater treatment facility. Photo courtesy of M.A. Mortenson Company

The ACUA has worked hard to bring renewable energy to the forefront in New Jersey by demonstrating that alternatives to traditional sources of energy do exist. This high profile wind and solar project, and the 32 million people who drive past it each year, will help elevate the importance of clean, renewable energy as precious natural resources become more scarce — and expensive. ❖

“Solarize Our Schools”

Lead Partner: Cape Light Compact

Other Partners: Massachusetts Technology Collaborative, The NEED Project, KW Management Inc., Fat Spaniel Technologies, Solar Wrights Inc.

Through an initiative with the Massachusetts Technology Collaborative’s Renewable Energy Trust, The Cape Light Compact undertook a project to place solar arrays on a school in each of the 21 towns of Cape Cod and Martha’s Vineyard. In addition to the installation of the 21 arrays, The Compact worked with Fat Spaniel Technologies to install data acquisition systems at each site to monitor and record the energy production.

Each solar array’s includes a data acquisition system (DAS) and an educational interface which enables teachers to demonstrate to students and community members how the solar panels work, how the panels differ in production from site to site and how renewable energy can help the environment.



The NEED Project of Manassas, Virginia supplies the Cape Light Compact with educational kits and materials to augment solar energy studies in the schools. The educational interface is in the form of a website that can be used by teachers across the country.

The “Solarize Our Schools” project has been the subject of a teacher’s workshop as well as a spotlight at an education conference held last winter. In addition, the press has covered the progress of the program, and this has spawned interest from the community at large. ❖

Texas Solar for Schools Project

Lead Partner: Texas State Energy Conservation Office

Other Project Partners: LCRA and twelve electric wholesale customers (Bandera Electric Cooperative, Bluebonnet Electric Cooperative, Central Texas Electric Cooperative, City of Brenham, City of Hempstead, City of Flatonia, City of Lampasas, City of Llano, City of Luling, City of San Marcos, City of San Saba and City of Waelder).

The Lower Colorado River Authority (LCRA) contracted to install fourteen 1 kilowatt photovoltaic systems on eleven schools, one LCRA environmental learning center and one utility office in a city with a large school district student population. The PV systems were installed primarily for demonstration and education purposes to allow students to see the equipment up close and to view and monitor its output online. The learning center will also have a 2.4 kW wind turbine installed to demonstrate wind energy technologies as part of its curriculum.

In the classroom, students can monitor the output of their system and compare it to other systems installed around the state and the U.S. Teachers received training to enable them to manipulate the online data and to learn more about photovoltaic technology so they can pass this knowledge on to their students. Using an educational curriculum developed by the Texas State Energy Conservation Office, teachers can integrate renewable energy technology into many courses including math, science, language arts and agriculture.

In all cases, the community supported the installation of these photovoltaic systems through city council or board approval. Most installations are in rural Texas communities where students had never actually seen a photovoltaic system, and some were unaware



Dedication ceremony at Manor Middle School sponsored by Bluebonnet Electric Cooperative. Pictured are students, teachers, the principal, school district superintendent, electric cooperative and LCRA representatives.

photovoltaic technology actually existed. The Texas Solar Schools project was able to raise awareness and provide first-hand knowledge of renewable energy technology and its impact to protect and improve the environment.

To help spread the word about the Texas Solar Schools Project, the LCRA provides information to other utilities, especially other wholesale electric providers that serve public power distribution utilities such as cooperatives and municipally owned providers. Their program can be used as a “blue print” of how to manage and implement similar projects. The LCRA will document the project in terms of organization, process, “lessons learned”, best practices and case studies. This information will be shared via conferences, papers and other utility networking opportunities. ❖

Why Join IREC?

The value of an IREC membership is twofold: first, it enables us to continue to identify and respond to critical renewable energy issues in communities like yours; and secondly, your support makes it possible for us to produce quality materials and deliver quality services that promote renewable energy across the U.S. Because we understand our members’ objectives, we listen and work together to deliver valuable information and educational tools and products. Being an *IRECian* connects you with a network of renewable energy experts across the country.



2007 marks IREC's 25th year!

Thank you very much for your membership and support. We're looking forward to another 25 years. **Join us**, and help us continue moving sustainable markets for clean and renewable energy into communities like yours. Please visit www.irecusa.org for more information.



IREC 2007 Special Recognition Awards

The Interstate Renewable Energy Council receives a considerable amount of support from many members of the renewable energy community. Each year, IREC presents a special recognition award to a few of these very special people to thank them for their significant contributions to the Council's mission and projects.

Maryland Senator Rob Garagiola has been the driving force behind Maryland's solar policies for years, beginning with his development of the state's solar grant program. In 2007, he spearheaded the effort for a historic "all in one" bill – Maryland's Senate Bill 595 – bringing interconnection, net metering, and a gigawatts-class best practices solar standard. From square one through a tough fight in the dramatic final hours, Senator Garagiola was a true leader. More than any other individual, his technical savvy, personal conviction, and tactical brilliance brought Maryland from the "back of the pack" to a position of national leadership.

Maryland Delegate Sue Hecht was the initial sponsor of House Bill 1016, the identical House of Delegate companion bill to Senate Bill 595. Her dedication to clean energy development was evident in her work to advance this critical legislation through committee and on the House floor. Delegate Hecht was always available to advocates of clean energy and was tireless in her commitment to passage of the bill as a whole, and her efforts were crucial to negotiating several last-minute changes with the utilities.

Jim Callihan is the CEO and President of Renewable Energy Access. Started in 1998, Jim and his staff have created one of the most recognized and trusted sources of news and information on renewable energy. The company publishes "The Renewable Energy Daily," an e-newsletter, and "Renewable Energy Weekly News," with a circulation of more than 35,000 readers worldwide. If you need information on companies, products, policies, jobs, and events, renewableenergyaccess.com is the place to go. Their Renewable Energy Action Alert Network makes a critical difference when breaking news needs fast action. Jim and his colleagues continue to give IREC advice and guidance on getting our information out. Jim's vision and passion for renewable energy has made him a leader in the field. IREC is glad to know Jim Callihan as a colleague and friend.

Ken Sheinkopf is Vice President of The Sheinkopf Group, a national energy education consulting firm. Last June, he retired after 24 years as the Director of Public Affairs at the Florida Solar Energy Center. Many of us know Ken through his weekly newspaper home energy column written since 1986. It is nationally syndicated and goes to more than 400 newspapers and magazines. His "Ask Ken" column appears in each issue of the *Solar Today* magazine. From 1988 through 1995, Ken was based in Washington, D.C. where he served as Deputy Director of the Solar Energy Industries Association, Contracts Manager of the U.S. Export Council for Renewable Energy, and Executive Vice President of the Solar Energy Research and Education Foundation. Ken has been a dear friend of IREC's for many years and has us inspired us through the ups and downs of working to advance renewable energy. **Thank you, Ken!**

Bill Guiney has twenty-six years of experience in the solar and energy efficiency industries. Currently a Program Manager for Renewable Energy Solutions for Johnson Controls, Inc., Bill is responsible for PV and solar thermal technologies. He recently relocated from Raleigh, North Carolina to Milwaukee, Wisconsin. Bill has been a licensed solar contractor in Florida, operated a successful distribution company, was the past president of AET manufacturing, and was General Manager of Duke Solar/Solargenix Energy Water Heating Division. Bill has provided training programs around the world and has fit IREC into his busy schedule to run on-site and web-based training courses for us. He is a Certified Home Energy Rater and has been a leading instructor for solar thermal at the Florida and North Carolina Solar Energy Centers and he serves on the NABCEP technical committee for solar thermal. Bill makes us all a lot smarter.

Roger Ebbage is the Director of the Northwest Energy Education Institute at Lane Community College in Eugene, Oregon. The Lane Community College Energy Management Program offers degree, certificate and industry training. Students can earn a two-year Associate of Applied Science degree. In the fall of 2003, the Lane program began offering solar thermal and solar electric system installation courses leading to this degree. Roger's program serves as a national model and became ISPQ Accredited in July 2007. Roger has given his time, advice and guidance to IREC for many years. He serves on IREC's ISPQ Advisory Board, serves on our Workforce Education Conference Committees, and was an original NABCEP Board member. Roger is an important member of many IREC committees and projects. We gain from his ongoing involvement and expertise.

IREC would like to acknowledge and thank the sponsors who helped make the 2007 IREC Annual Meeting possible

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SunEdison takes a fundamentally different approach to solar energy: we deliver solar electricity as a service, not a product. Our vision, people, methodology, and partners all contribute to making SunEdison the leading solar energy service provider in North America.

DT Solar is a premier provider of solar energy systems serving commercial, institutional and industrial businesses, and is the largest North American integrator of SCHOTT Solar panels and mounting hardware. Founded in 2004, DT Solar specializes in analysis, design, engineering, development, financing and implementation of solar photovoltaic systems.



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The Delaware Department of Natural Resources and Environmental Control, Energy Office administers the State Energy Program in Delaware.



Energy Trust is a public-purpose organization dedicated to energy efficiency and renewable energy generation. It helps Oregonians save energy, increase the comfort of their homes and businesses, and move toward energy self-reliance.

The Hawaii Department of Business, Economic Development & Tourism is Hawaii's resource center for economic and statistical data, business development opportunities, energy and conservation information, and foreign trade advantages.



The Virginia Department of Mines, Minerals and Energy's mission is to enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner in order to support a more productive economy in Virginia.



The Sacramento Municipal Utility District (SMUD) was founded with the idea that providing electric power to Sacramento was a job best done by a public utility overseen by an elected board of directors. SMUD is nationally recognized as a leader in renewable resources and electric transportation. Providing Earth-friendly energy — preserving our natural resources and reducing pollution — is an important part of the District's vision as a community-owned utility.

Orlando Utilities Commission OUC-The Reliable One, is a municipal utility owned by the citizens of Orlando.



It provides electricity and water services to customers in Orlando, St. Cloud and parts of Orange and Osceola counties.

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City of Santa Monica Environmental Programs Division (EPD) is responsible for the development and implementation of the Sustainable City Plan, a plan that sets long-term policy goals to harness the power of local government, business and individuals to address many of the economic, environmental, and societal forces in such a way as to protect our way of life for future generations.

The North American Board of Certified Energy Practitioners (NABCEP), a volunteer board of renewable energy stakeholder representatives, offers national, credentialing and certifications for renewable energy professionals. Current NABCEP certification programs exist for solar electric and solar thermal installers. To date, there are 365 NABCEP-certified PV installers and 40 NABCEP-certified solar thermal installers.



Renewable Energy Long Island (RELI) is a membership-based, not-for-profit organization promoting clean, sustainable energy use and generation for Long Island. RELI seeks public participation in energy policy decisions to encourage energy efficiency and the use of renewable energy sources, and to protect our environment, economy, and public health.