

Wind Powering America FY07 Activities Summary



U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable



Dear Wind Powering America Colleague,

We are pleased to present the Wind Powering America FY07 Activities Summary, which reflects the accomplishments of our state Wind Working Groups, our programs at the National Renewable Energy Laboratory, and our partner organizations. The national WPA team remains a leading force for moving wind energy forward in the United States.

At the beginning of 2007, there were more than 11,500 megawatts (MW) of wind power installed across the United States, with an additional 4,000 MW projected in both 2007 and 2008. The American Wind Energy Association (AWEA) estimates that the U.S. installed capacity will exceed 16,000 MW by the end of 2007. When our partnership was launched in 2000, there were 2,500 MW of installed wind capacity in the United States. At that time, only four states had more than 100 MW of installed wind capacity. Seventeen states now have more than 100 MW installed. We anticipate five to six additional states will join the 100-MW club early in 2008, and by the end of the decade, more than 30 states will have passed the 100-MW milestone. WPA celebrates the 100-MW milestones because the first 100 megawatts are always the most difficult and lead to significant experience, recognition of the wind energy's benefits, and expansion of the vision of a more economically and environmentally secure and sustainable future.

WPA continues to work with its national, regional, and state partners to communicate the opportunities and benefits of wind energy to a diverse set of stakeholders. WPA now has 30 state Wind Working Groups (welcoming Georgia and Wisconsin in 2007) that form strategic alliances to communicate wind's benefits and challenges to state stakeholders. We anticipate adding three to four more state Wind Working Groups in 2008 (Kansas, Arkansas, and Maine). More than 140 members of national and state public- and private-sector organizations from 39 U.S. states and Canada attended the 6th Annual WPA All-States Summit in Los Angeles in June. The WPA Web site continues to break past records, with 25,000 to 35,000 visitors per month.

WPA's emphasis remains on the rural agricultural sector, which stands to reap the significant economic development benefits of wind energy development. Additionally, WPA continues its program of outreach, education, and technical assistance to Native American communities, public power entities, and state regulatory and legislative bodies.

We continue to work on wind-siting issues, including radar, with other agencies that have responsibilities for development on public lands and protection of wildlife. WPA expanded its Wind for Schools pilot effort in Colorado to Nebraska, Kansas, South Dakota, Montana, and Idaho and plans to expand it to four to five additional states in 2008. WPA also formed three Regional Wind Energy Institutes to educate and train stakeholders to present the wind energy story. Through these joint efforts and many others, we continue to expand wind energy as a viable option for power generation. The 20% Wind Energy by 2030 scenario developed by AWEA, the U.S. Department of Energy, the National Renewable Energy Laboratory, and other stakeholders will require significantly enhanced outreach efforts to communicate the benefits, the required infrastructure upgrades, and the regulatory actions needed to accomplish this promising future for many stakeholder groups in all regions of the country.

We appreciate the commitment of our partners to continue to work together for the benefit of all stakeholders. We share a common vision and hope for the future, and the success is yours to celebrate.

Regards,



Phil Dougherty
WPA National Coordinator



Larry Flowers
WPA National Technical Director

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Cover photos, clockwise starting at top left:

A wind turbine near the Outdoor Test Facility at NREL. Photo credit: Stephen Wilcox/PIX15260.

WPA contractors Dan McGuire and Tom Potter discuss the rural economic benefits of wind energy at the Farm Progress Show in Decatur, Illinois, in August 2007. Photo credit: Dan McGuire.

WPA team members gather in December 2006. Photo credit: Lee Jay Fingersh.

WPA contractor Dan McGuire and WPA national coordinator Phil Dougherty meet at the DOE exhibit at WINDPOWER 2007 in Los Angeles in June 2007. Photo credit: Dan McGuire.

Jonathan Miles (left) receives the Eastern Regional Wind Advocacy Award from WPA technical director Larry Flowers at the 6th Annual WPA All-States Summit in Los Angeles in June 2007 as national coordinator Phil Dougherty looks on. Photo credit: Robert Gough.

The WPA program recognized Mariah Bell of Montana's Fairfield Grade School for this winning entry to the Montana Energy Calendar that depicts wind turbines and the text, "Harvesting Clean Energy." In recognition of her creativity, artistry, and vision for wind energy for a cleaner, prosperous, and more sustainable future for Montana, WPA sponsored a field trip for Mariah and her class to the Horseshoe Bend Wind Farm in April.

The 396-MW Twin Groves Wind Farm in Illinois came online in 2007. Photo credit: Peter Juvinal/PIX15291.

WPA State Activities

Alaska

The Alaska Wind Working Group, in conjunction with NREL, organized and conducted a Wind Energy Applications Training Symposium (WEATS) training session in Anchorage on August 13-14, 2007. WEATS is designed as an introduction for project planners, developers, utility officials, engineers directly involved with energy projects, or those who are considering wind energy development and want to learn more about wind energy technology applications.

Alaska Wind Working Group:
www.akenergyauthority.org/programwind.html

WPA technical director Larry Flowers presents at the 2007 WEATS session in Anchorage in August 2007.



Martina Dabo, Alaska Energy Authority



Martina Dabo, Alaska Energy Authority

WEATS participants received an introductory overview of wind technologies, resource assessment, project planning, the analytical tools for conducting project pre-feasibility and identification analysis, and the implementation of large and small wind energy projects.

Renewable Energy Legislation Update

After more than 2 years of evaluation and study, the Arizona public utility commission passed an expanded renewable portfolio standard (RPS), known as the Renewable Energy Standard and Tariff (REST), to increase the amount of renewable energy purchased or produced by regulated utilities in the state. The new standard requires 15% of a utility's retail electric sales to come from renewable energy resources. In recognition of the benefits of distributed technology, the standard includes a carve-out for distributed resources, which will incent the development of small wind installations. Wind energy purchases are expected to comprise the bulk of purchases to meet the standard.

Arizona Wind Working Group: www.wind.nau.edu/azwgg/

Arkansas

The recent release of the Arkansas wind resource map and interest expressed by groups and several individuals motivated the State Energy Office to explore the creation of a Wind Working Group. Arkansas received its first Wind Powering America grant this year and is developing a Wind Working Group and planning a state-wide energy conference for fall 2007. Maureen Rose with University of Arkansas Cooperative Extension Service will work with the State Energy Office to coordinate the conference and set up the Wind Working Group.

Renewable Energy Legislation Update

Arkansas is considering two energy bills. The first bill strengthens net metering to allow the carry-forward of excess generation, an increase in the installation capacity to 300 kW, and the recognition of the value of Renewable Energy Credits will accrue to the energy generator. The second bill requires the public

Arizona

In 2006, Arizona Public Service Company (APS), Arizona's largest investor-owned utility, commissioned the state's first wind integration study for a utility. Northern Arizona University served as the project contractor and managed a project team that includes leading wind forecasting and modeling companies and individuals. The project employed technical advisory and stakeholder advisory committees. APS performed much of the modeling in-house, which educated APS employees and will allow for further modeling and refinement as conditions change. The study analyzed 10 sites in Arizona and found that the cost to integrate wind in APS' service territory was consistent with studies performed by other utilities, which document minimal costs.

Northern Arizona University conducted wind energy assessment on eight of 15 counties in the state with the best wind resource. For six of the counties (Apache, Cochise, Coconino, Graham, Mohave, and Navajo), the report contains both an analysis of the developable windy land and an economic benefits analysis. For Greenlee and Yavapai counties, only the developable wind energy analysis is provided. These reports provide useful data to elected officials and regional policy-makers to understand the wind development potential and to quantify the dollar and job impact of wind development. These reports are expected to be a springboard for encouraging active development in the windy regions and are available at <http://ses.nau.edu/wind/ArizonaWindEnergyAssessment-April2007.shtml>.

utilities commission to require jurisdictional utilities to consider clean energy resources in their resource plans and gives the Public Service Commission authority to allow utilities to recover costs through a surcharge or rate base.

Wind-Related Economic Development News

LM Glasfiber is opening a new plant in Little Rock. The plant, which will employ up to 1,000 people within 5 years, should begin operations in early 2008.

Michael French, Southwest Windpower/PX15337



California

Utility-scale wind farm growth continues at a sustainable rate, and efforts are now focused on small wind and community-scale systems.

Southwest Windpower donated a Skystream 3.7 wind system to the City of Berkeley's Shorebird Park Nature Center, the first municipal strawbale building in the United States.

California Wind Working Group: <http://cwec.ucdavis.edu/>

Colorado

WPA encourages land grant universities to become involved with wind energy projects, and as part of that effort, the WPA anemometer loan program in Colorado moved to Colorado State University (CSU).

Colorado Governor Bill Ritter's Office/PX15310



Colorado Governor Ritter (third from left) joins in the groundbreaking of the new Vestas plant in Windsor. According to Vestas, the plant will provide 35 white-collar jobs and 455 blue-collar jobs and will begin production in early 2008.



Frank A. Olier/PX15170

A 5th-grade class from Las Animas tours the Twin Buttes Wind Power Project near Lamar, Colorado, during the dedication ceremony on September 14, 2007.

New Wind Energy Projects

Five new projects totaling more than 830 MW have recently been constructed or are currently under construction.

Renewable Energy Legislation Update

Due in part to extensive education and outreach initiatives from wind advocates and coalitions (including Wind Powering America) and a change in leadership in the Colorado legislature, Governor's Office, and the Governor's Energy Office (GEO), numerous pro-renewable energy bills were recently passed.

- House Bill 1281, Renewable Portfolio Standards, doubles the state's renewable portfolio standard to 20% by 2020 for investor-owned utilities. Rural electric associations and municipal utilities must meet 10% by 2020.
- House Bill 1279, Tax Credits for Renewable Energy, restores tax exemption on machinery used to produce renewable energy.
- Senate Bill 246, Clean Energy Fund, will provide a steady stream of revenue to the GEO to advance energy efficiency and renewable energy throughout the state. GEO will use the fund to target investments in emerging technologies and attract New Energy Economy investment to Colorado.
- House Bill 1087, Wind for Schools, creates a grant program to help schools install wind turbines on campus and develop clean energy curriculum in the classroom.

Georgia

The Georgia Wind Working Group (GWWG) organized two workshops in fall 2006, one in Atlanta and one in Savannah, which attracted approximately 100 people from across the nation. Strategy discussions following these events led to the formation of three Georgia wind committees to address the specific needs of different geographic regions of the state: mountain, coastal, and offshore. These committees are now meeting on a quarterly basis and coordinating by e-mail. The greater GWWG continues to meet quarterly and coordinate by e-mail.

Georgia's recent comprehensive State Energy Strategy included support for Georgia's wind energy activities. Accordingly, GWWG representatives prepared an estimated budget for an anemometer loan program and presented this information for consideration for possible state funding. The feasibility of community wind in coastal communities of color and public lands may be assessed.

Members of the GWWG continue to actively engage in regional and national wind energy activities. The GWWG has expanded to include new members from state universities and the small wind industry and has had ongoing participation by representatives from all state utilities as well as larger wind developers. The group is exploring the degree to which it will expand its base and appeal to the manufacturing sector that is foreseen to provide significant economic growth to the state under a future 20% wind energy scenario.

Also, the GWWG (on behalf of Green Power EMC, a consortium of 31 Georgia electric cooperatives designed to procure and re-sell clean energy) will prepare a request for assistance on a feasibility study for a community wind system (1.5 MW to 7 MW) at the Floyd County Rocky Mountain pumped water storage facility. Green Power EMC has collected 12 to 18 months of wind data and is planning to discern the regulatory approvals, conduct further environmental studies, and address siting issues.

Southern Energy recently released its report (conducted with the Georgia Institute of Technology) on offshore wind, concluding



Rita Kilpatrick, Southern Alliance for Clean Energy

Georgia Wind Working Group members attended the Southeastern Regional Offshore Wind Power Symposium in Charleston, South Carolina, on February 26-27, 2007. Pictured from left to right: Al Pless, Rita Kilpatrick, Susan Stewart, Mary Carr, Handy Johnson, and Mary Hallisey-Hunt.

that available wind data (Class 4 regimes) indicate a 160-MW offshore system would produce electricity at 8.2 cents/kWh (assuming today's turbine costs, a Production Tax Credit, and a 20-year life).

Georgia Wind Working Group: www.gawwg.org/

Hawaii

New Wind Energy Projects

Shell announced plans to develop the 40-MW Auwahi Wind Project at Ulupalakua Ranch. The project may eventually include pumped hydro storage to store power from the wind turbines during off-peak periods for use during peak periods.

On the island of Hawaii, the original South Point wind farm has been turned off, and 14 new 1.5-MW turbines are being installed at the Pakini Nui Wind Project.

On the island of Kauai, the Kauai Electric Utility Cooperative has signed an agreement with UPC Kauai Wind Power for a 10.5- to 15-MW project in a location to be determined.

Hawaii Wind Working Group: www.state.hi.us/dbedt/ert/wwg/wwg.html

Idaho

The Idaho Energy Division continued to work with Clark County to investigate its wind power development possibilities. The county received a USDA grant for this investigation. Idaho National Laboratory, a Wind Powering Idaho partner, placed an anemometer at Blue Dome – Clark County. The county featured its wind development efforts in a visit by Senator Mike Crapo's staff in August 2007.

Also in August 2007, Idaho Energy Division staff gave wind energy presentations at hearings on Owyhee County's new draft energy plan. The county is located in one of the more remote areas in Idaho and is the site of a proposed 1,600-MW nuclear power plant. The draft energy plan places the development of renewable energy resources at the top of its priority list.

Working with the Idaho Energy Division, the Salmon River Electric Cooperative selected the Willow Creek Summit area for wind power development investigation. The site is relatively buildable for central Idaho, is close to the cooperative's 69-kV and 230-kV transmission lines, and is large enough to support a 435-MW project. Salmon River Cooperative manager Ken Dizes is applying for permits for anemometer placement from the landowners, the Bureau of Land Management, and the Idaho Department of Lands.

The Idaho Energy Division broadened its investigation of potential wind sites and added these sites to its Idaho Wind Project Development map to more closely reflect Idaho's true wind power generation potential. The new status map shows

a generation potential of 16,143 MW from 163 identified sites (compared to an Idaho load of around 2,000 MW).

The Idaho Energy Division continued organizing and hosting Idaho Wind Working Group meetings to discuss wind development issues and status in the state. The Wind Powering America Program gave a Carpe Ventem Award to G3, LLC for its role in developing the first utility-scale wind farm in Idaho, the Lewandowski Wind Farm, LLC.

The Energy Division continued to co-sponsor and participate in various Idaho activities promoting the development of wind power, including wind energy exhibits at the Harvesting Clean Energy VII Conference, the Idaho Ag Summit, Odyssey Idaho, and other events.

New Wind Energy Projects

Energy Vision used data from a Wind Powering Idaho anemometer on nearby state endowment land to begin its investigation of two approximately 20-MW wind projects on private land. Construction of the Bennett Creek and Hot Springs projects should begin in late 2007. With the current 75 MW of wind power in the state, these projects will push Idaho over the 100-MW mark some time next year.

Idaho Wind Working Group: www.idwr.idaho.gov/energy/wind/wind_wrkgrp.htm

Illinois

The new Illinois Wind Working Group (www.wind.ilstu.edu) held its first wind conference on June 28-29, 2007 in Bloomington, Illinois. The conference attracted a capacity crowd of more than 300 people.

The state's wind monitoring program, administered by the Illinois Institute for Rural Affairs at Western Illinois University, assists



Brian Jackson, Todd Haynes, and Craig Haynes of G3, LLC received WPA's Carpe Ventem Award for their role in restoring the Lewandowski wind turbines. (G3 principals Lars Dorr and Tom Harmon are absent from the photo.)

rural landowners and communities by providing wind velocity information for a feasibility analysis of proposed wind energy projects. Data are collected via a limited number of portable, 50-m towers and from communication towers of varying heights. Currently, data have been collected from 17 sites selected from an applicant pool and are posted at www.illinoiswind.org.

New Wind Energy Projects

In April 2007, Horizon Wind Energy completed Phase I of its Twin Groves Wind Farm in eastern McLean County. Phase II construction has begun and is scheduled to be completed by December. The project will total 396 MW when Phase II is complete.

Renewable Energy Legislation Update

Governor Blagojevich signed into law a Renewable Energy Standard (RES) and an Energy Efficiency Portfolio Standard (EEPS) that will require Illinois utilities to supply 2% of their power from renewable energy sources by 2008, 10% by 2015, and 25% by 2025. The EEPS will require Illinois utilities to reduce overall electric usage by 0.2% of demand in 2008, escalating to 2.0% by 2015. At least 75% of the RPS must come from wind generation.

On August 24, Governor Blagojevich signed Senate Bill 0680 into law as Public Act 095-0420. Among other things, PA 095-0420 sets a statewide standard limit of 2 MW for renewable energy systems, with bi-directional metering for systems less than 40 kW. Also, control of renewable energy credits (RECs, or "green tags") stays with the system owner, not the utility. This legislation also sets a statewide interconnection standard on a fast track of 120 days to be enacted.

New Wind Energy School Programs

Illinois State University has created a new renewable energy interdisciplinary undergraduate major. This curriculum is the first of its kind, and the university expects to admit new students for the program in fall 2008 (pending approvals).

Illinois Wind Working Group: www.wind.ilstu.edu/

Indiana

The Indiana Wind Working Group (IWWG) held six events during FY2007 covering a wide range of sectors including utilities, advocates, industry, ag/rural organizations, government, and landowners. Experts presented on topics such as economic development (rural and manufacturing), transmission and siting issues, and the 20% Wind Energy by 2030 Scenario. The highlight of the year was the IWWG bus trip to Horizon Wind Energy's Twin Groves Wind Farm in Illinois. This was the first trip to a wind farm for many of the 55 IWWG members who attended. Horizon Wind Energy and White Construction hosted the event (pictures are available at www.in.gov/energy/technologies/Wind/Windfarm%20Trip%205-14.html).

Illinois State University hosted the Advancing Wind Power in Illinois conference on June 28-29, 2007, in Bloomington. The conference brought together nationally recognized wind energy experts and local policymakers to examine ways to promote further growth of wind energy production in the state. Conference session topics included site location and zoning, project design, financing, regulations, and energy markets. Featured speakers included:

- Jack Lavin, Illinois Department of Commerce and Economic Opportunity (wind energy and job creation)
- Larry Flowers, Wind Powering America (wind energy and agriculture)
- Beth Soholt, Wind on the Wires (regional energy transmission)
- Howard Learner, Environmental Law and Policy Center (current status of wind energy policy and projects in Illinois)
- Phil Dougherty, U.S. Department of Energy (the critical need for wind energy development).



In FY07, several Indiana electric utilities made commitments to purchase and/or build up to 530 MW of wind power in the coming years. Furthermore, Appalachian Power of West Virginia and Virginia agreed to purchase 100 MW of wind power from an Indiana wind farm, opening a new economic opportunity of exporting Indiana wind power to other states. All Indiana electric utilities have been active members of the IWWG since its creation in 2005.

New Wind Energy Projects

Construction began on the 130-MW Benton County Wind Farm in July 2007. The facility, Indiana's first wind farm, will bring significant economic benefits to this rural county of 9,050 people. Almost 100 landowners are participating in Orion Energy Group, LLC's project.

Indiana's second wind farm, BP Alternative Energy's 300- to 400-MW Fowler Ridge Wind Farm in Benton County, is expected

to be completed in 2008. Several other large projects are being developed for the 2008-2011 timeframe.

Indiana Wind Working Group: www.in.gov/energy/technologies/windworkgrp.html

Iowa

Monthly data documentation on the Tall Tower Project commenced with the completion of equipment installation in late November 2006 and continued through the monitoring period. Wind speed, wind direction, and temperature readings were recorded at all five towers across the state, at elevations of up to 200 m. Raw tower data are available for the time period beginning in November 2006 and will be posted monthly on the Web with user access via an FTP site.

Through the first half of the monitoring period, wind speed, wind direction, and temperature reading were recorded at 15 of 16 monitoring levels across the state, at elevations of up to 200 meters. Initial data sets were collected and archived at AWS Truewind's Indiana office.

New Wind Energy Projects

EnXco Development Corporation and MidAmerican Energy Company will install an additional 75 MW of wind generation at the Pomeroy Project in Pocahontas County. The 50 1.5-MW turbines will augment the 123 MW under construction.

Kansas

Nearly 200 individuals participated in a day-long community wind workshop at Cloud County Community College on October 31, 2006. The event was organized and co-sponsored by Wind Powering America, the Kansas Rural Center, Kansas Farmers Union, Kansas Farm Bureau Foundation, and the Kansas Energy Office. Speakers included Tom Wind, a community wind project consultant; Lisa Daniels, founder and executive director of Windustry; Joe King, Coriolis; Jennifer States, JW Prairie Windpower LLC; Joe Harkins, Special Assistant to Governor Sebelius; and Ken Frahm, Kansas Energy Council.

In September 2007, Kansas Lt. Governor Mark Parkinson agreed to lead an effort to revive the Kansas Wind Working Group. Since his election in fall 2006, along with the re-election of Governor Sebelius, Parkinson has taken a lead role in promoting renewable energy and energy efficiency for Kansas. He was also named by the Governor as co-chair of the Kansas Energy Council in early 2007.

An organization meeting is planned for fall 2007 and a statewide conference for spring 2008.

New Wind Energy Projects

Two new Kansas wind farms have been announced. The Smoky Hills Wind Farm (100 MW), located in Lincoln County along

Interstate 70 west of Salina, is under construction and planned to be online in 2008. Three utilities are purchasing the power: Midwest Energy, Sunflower Electric Corporation, and Kansas City Board of Public Utilities.

Construction on the Meridian Way Wind Farm in Cloud County (200 MW) was expected to commence in early 2008. Empire District Electric of Joplin, Missouri, will purchase 105 MW of the power.

Renewable Energy Legislation Update

Governor Sebelius announced in her State of the State address on January 10, 2007, that the state's utilities had committed to a 10% renewable energy goal by 2010 and a 20% goal by 2020, or about 1,050 MW by 2010 and 2,100 MW by 2020. As a result of this initiative, two of the state's largest utilities announced RFPs for 900 MW of new wind by 2010 (Westar Energy for 500 MW and Kansas City Power & Light for 400 MW).

Maine

Governor Baldacci established the Governor's Task Force on Wind Power Development, which is designed to make Maine a leader in wind power development, protect Maine's natural resources, and maximize residents' benefits from wind power development. The group's initial discussions centered on ways to install 1,000 to 2,000 MW of wind energy in Maine. Meeting schedules, agendas, and summaries are available at www.maine.gov/windpower. This task force is a timely development because one of Maine's current Wind Powering America goals is to create a Wind Working Group and establish an anemometer loan program for small wind.

With the help of a federally funded Residential Energy Assistance Challenge grant, a Bergey windmill now generates



up to 10 kilowatts of electricity for the Millstream Heights Apartments, a subsidized elderly housing complex in Winter Harbor, Maine. The wind turbine supplies power to the building that houses the community room and laundry room for the complex, which includes 14 one-bedroom units and two two-bedroom units.

Tom Walsh, The Ellsworth American/PXI 51 09

Maryland

In December 2006, more than 35 stakeholders attended a Maryland Wind Working Group workshop. This refresher workshop included a facilitated discussion on barriers to wind development in the state. Stakeholders were invited to participate in the draft of a fact sheet for the Maryland legislature to quantify the benefits and barriers to development. It was distributed to the Maryland General Assembly in February 2007.

In April 2007, volunteer stakeholders from the Wind Working Group formed a steering committee to assist in developing a strategic plan and forging partnerships that are critical to the success of the state's wind activities. The committee is comprised of a diverse mix of stakeholders from industry, academia, electric utilities, non-profits, and government. At its kick-off meeting, the committee reviewed the 20% Wind Energy by 2030 Scenario, discussed barriers to wind development in Maryland, and brainstormed activities to pursue over the next several years.

Renewable Energy Legislation Update

Net metering legislation was amended from 500 kW to up to 2 MW, and total net metering capacity was increased from about 34 MW to 1500 MW.

SB 566 was signed into law, exempting wind-electricity-generating facilities under 70 MW from Certificate of Public Convenience and Necessity (CPCN) licensing processes through the Public Service Commission. However, these facilities are still required to obtain all necessary federal and state permits, including environmental. A public hearing process must also be conducted.

New Wind Energy School Programs

In July 2007, Governor O'Malley announced the state's Clean Energy Schools, part of the EmPower Maryland initiative. Maryland is partnering with Maryland businesses to install a solar, wind, or biomass demonstration project at a school in every county in the state in the next year. Sponsoring wind manufacturers include Bergey Windpower, PacWind, and Southwest Windpower. Several schools have expressed interest in installing a wind turbine on their campuses.

The Maryland Energy Administration (MEA), with the help of James Madison University, installed its first anemometer in Manchester in April 2007. Frostburg State University will administer the program. The Appalachian Regional Commission recently awarded Frostburg State University \$45,816 to help fund the development and implementation of a Wind-Solar Energy (WISE) Certified Education Program to educate and train participants throughout the three-state Appalachian region in designing and installing residential electric generation systems using photovoltaic modules or small wind turbines. The program will prepare participants for the certification test given by the North American Board of Certified Energy Practitioners.

Frostburg State University, through a grant with MEA, installed a 3.8-kW solar-wind demonstration system on its campus during summer 2007. With a 1.8-kW Southwest Wind Power Skystream 3.7 and 2 kW of PV installed, this demonstration project will be used in interdisciplinary curricula, summer programs for K-12 schools, and will develop two case studies (one on the process of installing residential-scale systems and the other on its performance as well as environmental and societal effects). This grant also generated a Renewable Energy Symposium, during which more than 160 people listened to more than 30 presentations on renewable energy, including wind. Several wind manufacturers and developers also showcased their companies' technologies.

Massachusetts

With WPA backing, the UMass Renewable Energy Research Laboratory (RERL) provides a wide development-support program for community wind and public power, offers extensive public education, supports policy-makers in overcoming barriers to wind power, and convenes state wind stakeholders.

The core of RERL's pre-development support is the anemometer loan program, with dozens of monitoring sites around Massachusetts and extending into Maine. (Within Massachusetts, this program is also supported by the Massachusetts Renewable Energy Trust (RET), the state's system benefit charge fund.) Two recent highlights of WPA-supported anemometry are Chester Municipal Electric Light Department, a small municipal power company in a western Massachusetts town, which is ineligible for RET funding, and Swans Island Electric Cooperative, off the coast of Maine, which is considering wind power as a cost-saving measure. RERL is also working with the Wampanoag tribe on Martha's Vineyard through Wind Powering America's Native American program. The full list of sites served by the anemometer loan program can be viewed on RERL's data repository at www.ceere.org/rerl/rerl_resourcedata.html.

Beyond anemometry, RERL extends other forms of development support for community wind to municipal electric companies such as Hull, Paxton, Hingham, and Templeton, and beyond Massachusetts for communities in Maine, Connecticut, Vermont, and Rhode Island. Wind Powering America also supports RERL's extensive public education efforts around the state and elsewhere in New England, including many "Wind 101" public forums.

Massachusetts also has a strong and active Wind Working Group, which holds quarterly meetings (attendance has topped 100 stakeholders). Meeting agendas during this period were as follows:

- November 2006: Policy Options for Renewable Energy Incentives, with RERL's James Manwell speaking; followed by a demonstration of RERL's SODAR mobile wind resource monitoring equipment

- February 2007: Utility Interconnection of Wind Power, with speakers from utilities, the ISO, and a recent DG developer with interconnection experience
- May 2007: Birds, Wind, and Energy, with speakers from Mass Audubon and a marine scientist who completed a recent wind-avian impact study in the state
- September 2007: The State's New Direction for Wind Power, with the new state energy commissioner and two top energy and environmental policy-makers.

The Massachusetts Wind Working Group also organized a tour of the ISO New England control room for wind power stakeholders.

As a new participant in Wind Powering America's priority state program, RERL is beginning to develop a 3-year strategic plan for removing barriers to wind power in Massachusetts. This effort kicked off with meetings with top state energy and environmental policy-makers.

In addition, the University of Massachusetts installed two anemometers and a wind direction indicator at both the 130-foot level and the 165-foot level of a 300-ft (U.S. Cellular) tall tower on Swan Island. Wind speed, wind direction, and temperature are recorded 24/7 and fed to a data logger, which has the capacity to download the data by wireless link to the University of Massachusetts every 48 hours. A Web page, funded by an Island Institute grant, will update Swans Island residents on the progress of their wind power studies.

Massachusetts Wind Working Group: www.ceere.org/rerl/mwwg.html

The rotor is raised on the GE 1.5sle wind turbine at Jiminy Peak Ski Area in the Berkshire Mountains of western Massachusetts.



Sally Wright, Renewable Energy Research Lab, UMass/PX15160

Michigan

On September 10-11, 2007, the Land Policy Institute at Michigan State University sponsored the first Manufacturing and Developing Wind Energy Systems in Michigan conference. More than 280 manufacturers, utility executives, business leaders, policy makers, researchers, and wind developers attended the two-day event. Governor Granholm spoke about the importance of wind energy and an RPS.

On April 24, 2007, a Wind Energy and Economic Development Forum in East Lansing attracted more than 100 participants. A grid integration session the next day attracted approximately 40 utility and regulatory staff.

Michigan Wind Working Group: www.michigan.gov/dleg/0,1607,7-154-25676_25774---,00.html

Michigan Governor Jennifer Granholm visited the Calvin College campus in February 2007 to hear a presentation on wind energy. Engineering students are working to site a turbine on Calvin's campus with the help of a grant from the State of Michigan. A campus Wind Energy Interest Group is comprised of students who volunteer their time for the project. Earlier

in the month, the Governor announced an alternative energy plan that includes a minimum of 10% of energy coming from renewable sources in Michigan by 2015.



Michigan Governor Jennifer Granholm visits Calvin College.

Minnesota

Lisa Daniels of Windustry, the WPA contact for Minnesota, is working with NREL to implement a WPA Regional Wind Energy Institute.

On September 10-14, 2007, the Utility Wind Integration Group (UWIG) conducted a Wind Integration Short Course in St. Paul.

New Wind Energy Projects

The White Earth Tribal Nation is pursuing a Congressionally directed project for siting, evaluation, installation, and grid connection for a community-size turbine on the reservation. Tribe members are measuring the wind resource and have contracted with their consultants. To date, they have completed a portion of the preliminary design, a financial estimate based on power sales to a local rural electric utility, and a portion of the National Environmental Policy Act (NEPA) studies.

Missouri

In March 2007, Associated Electric Cooperative Inc. (AECI) of Springfield was awarded the 2006 Wind Cooperative of the Year Award by Wind Powering America, the U.S. Department of Energy, and the National Rural Electric Cooperative Association. AECI got involved with wind energy in January 2006 by signing a power purchase agreement to purchase the power from the Bluegrass Ridge Wind Farm. By October 2006, AECI tripled the scale of its involvement in wind energy projects to 156 MW by buying the power from two other major wind farms now under construction. The three major wind farms are in three adjoining counties in northwest Missouri.

Four additional tall communication towers were outfitted with wind research instrumentation during the year, bringing the total number of instrumented communication towers in Missouri with data in the public domain to nine. The University of Missouri-Columbia's Atmospheric Sciences Program is conducting the research, which is funded by all four of Missouri's investor-owned electric companies and a subgrant by the Missouri Department of Natural Resources (DNR) Energy Center (with support from Wind Powering America).

As part of the Missouri DNR Energy Center's wind energy outreach activities, the Missouri Anemometer Loan Project continued for the fourth year. As of spring 2007, the fleet of 10 portable anemometer towers has been installed at 36 locations.

New Wind Energy Projects

Missouri's first wind farm, the 56-MW Bluegrass Ridge Wind Farm, was dedicated on September 17, 2007. Three other wind farms are under construction in northwest Missouri and will add an additional 105 MW of capacity.

Renewable Energy Legislation Update

In May 2007, the Missouri Legislature passed Senate Bill 54, which sets goals for the portion of the state's electricity to come from renewable energy sources. The bill calls for 4% of total electric sales to come from renewable energy technologies by 2012, increasing to 8% by 2015, then 11% by 2020, subject to rulemaking by the Missouri Public Service Commission. SB 54 also includes a provision called the Easy Connection Act. This provision overhauled the statutory framework for net metering for customer-owned systems up to 100 kilowatts and addressed interconnection issues.

Missouri Wind Working Group: www.dnr.mo.gov/energy/renewables/windenergy-workgroup.htm

Energy from the new 56-MW Bluegrass Ridge Wind Farm located near King City, Missouri, will help power the city of Columbia. Associated Electric Cooperative Inc. received the 2007 Wind Cooperative of the Year Award from the U.S. Department of Energy, Wind Powering America, and the National Rural Electric Cooperative Association for its leadership, demonstrated success, and innovation in its wind power program. The cooperative has committed to 156 MW of wind power from three Missouri projects, including Bluegrass Ridge. In addition, Wind Capital Group and John Deere Capital Corporation received Carpe Ventem (Seize the Wind) Awards for their roles in bringing the first utility-scale wind project in Missouri online.



Photo credit: Associated Electric Cooperative/PX15259.

Montana

Team members from the Montana Department of Environmental Quality (DEQ) conducted outreach activities in FY07.

They presented a workshop on the alternative energy loan program to approximately 50 people at the Festival of the Wind Conference in Harlowton. They also met with Montana State University ag extension agents in Custer and Fallon Counties to provide information from Montana Wind Power America program to assist farmers and ranchers with Farm Bill applications.

In addition, DEQ contracted with Van Jamison of Powair Wind Consulting as a wind working group facilitator.

Montana Wind Working Group: www.deq.state.mt.us/energy/Renewable/MtWindWorkGroup.asp

Nebraska

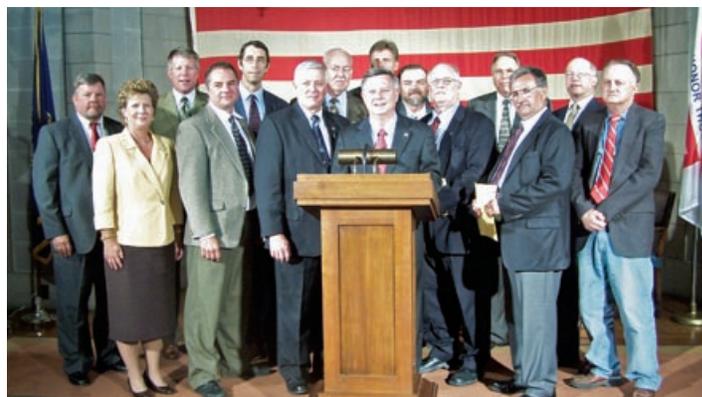
Outreach promoting the development of Nebraska's wind energy resources to the agricultural sector was conducted at the State Fair in Lincoln (August 25-September 4, 2006); Husker Harvest Days in Grand Island (September 12-14, 2007); and the Nebraska Farmers Union annual meeting (December 2006).

In November 2006, a Wind Working Group meeting was conducted with the CEOs of the state's electric utilities to discuss areas, including wind energy development, related to transmission and the use of eminent domain. Both are significant barriers to the increase in electricity production from wind resources.

New tools and resources were added to the Nebraska Energy Program's wind energy page at www.neo.ne.gov/renew/wind.htm. Wind tools resources and other wind energy information were included in the Energy Office's periodic newsletter, Nebraska Energy Quarterly. And between July 1, 2006 and June 30, 2007, the renewables pages – of which wind energy is the major section – at the agency's Web site recorded more than 20,000 hits.

Renewable Energy Legislation Update

As a result of the past few years of rural outreach and public education regarding the benefits of wind energy for rural economic development, new and progressive public policy has evolved. The American Corn Growers Foundation disseminated Wind Powering America educational information far and wide in Nebraska. Farm organizations, renewable energy advocates, legislators, and policy makers at all levels saw the benefits of wind energy and realized that Nebraska was far behind, even though it is rated sixth in the nation in terms of wind resource. The Nebraska Farmers Union took up the cause of convincing the legislature to implement a policy to encourage wind energy



A unanimous Nebraska legislature passed LB 629, the Rural Community-Based Energy Development Act, on May 21, 2007. The legislation creates new rural economic development opportunities through new wind energy projects. Shortly after, the Nebraska Public Power District announced 150 MW of new wind energy development in the state. Pictured in the front row (left to right) are Shelley Sahling-Zart, Lincoln Electric System; Robert Byrnes, Nebraska Renewable Energy Association; John Hansen, Nebraska Farmers Union; Nebraska Governor Dave Heineman; Dan McGuire, American Corn Growers Foundation; Gale Lush, American Corn Growers Foundation; Rex Woolen, Nebraska Farmers Union and American Corn Growers Association. Pictured in the back row (left to right) are Thomas Richards, Omaha Public Power District; Terry Warth, Nebraska Public Power District; Ken Winston, Nebraska Sierra Club; Senator Cap Dierks; Keith Dittrich, American Corn Growers Association; Martin Kleinschmit, Center for Rural Affairs; John Dittrich, American Corn Growers Association; John McClure, Nebraska Public Power District.

development. Senator Cap Dierks of Ewing introduced LB 629, The Rural Community-Based Energy Development Act, which was passed unanimously. On May 21, 2007, Governor Heineman signed the bill into law with the Nebraska Farmers Union, the American Corn Growers, and other advocates and utility interests present.

New Wind Energy School Programs

Dan McGuire of the American Corn Growers Foundation accepted the role of Nebraska facilitator for the WPA Wind for Schools program. McGuire worked with Jerry Hudgins, chair of the Engineering Department at the University of Nebraska Lincoln (UNL) Wind Applications Center (WAC) and the Nebraska Energy Office, on this initiative.

As a direct result of initiating contact with and making presentations to the Elkhorn Valley School Board at Tilden, the school became interested in partnering with NREL and installing a Skystream 3.8 (1.8-kW) wind turbine. School board members passed positive motions twice and sent science teacher Lee Burenheide to the NREL Wind for Schools Summit in September 2007 (along with McGuire, Hudgins, and John Richards of the Nebraska Public Power District, or NPPD). Because Nebraska is the only 100% public power state, NPPD's support is essential for this program.

Elkhorn Valley School will likely be the first Nebraska school to participate in this new WPA program. The UNL WAC purchased two of the Skystream wind turbines.

Nebraska Wind Working Group: www.neo.ne.gov/renew/wind.htm

Nevada

Nevada is home to the nation's premier military flight training facilities: Nellis Air Force Base, Fallon Naval Air Station, and Creech Air Force Base. As a result, the military is concerned with the placement of wind farms, in terms of air space and radar. During 2007, Jeneane Harter, consultant to the Nevada Renewable Energy and Energy Conservation Task Force and Nevada's Wind Powering America representative, and Pete Konesky of the State Office of Energy worked with the military to develop a Nevada "stoplight" map of the state. The map, which is still under review, divides the state into three zones: 1) red zones where the military would prefer wind farms not be built; 2) yellow zones where wind farms could be built under certain conditions; and 3) green zones where the military has no concerns regarding wind farms. An August 2007 presentation explaining the project, including a copy of the most recent draft map, can be found at http://budget.state.nv.us/clearinghouse/jmac_07_08_22/morning%5C8-22-07%20JMAC%20WWG%20BRIEF.pdf

Governor Gibbons appointed Harter to his Renewable Energy Transmission Access Advisory Committee. The committee will

publish a report identifying the transmission projects necessary to develop the state's renewable energy resources. The report will include a set of resource maps (one for each renewable resource) with overlays for all the state's land stakeholders, including the military. The wind map will help the utilities and developers place wind farms in areas that will not interfere with military readiness.

The committee will also identify strategic renewable energy zones. To identify the zones, the committee has broken up into sub-committees. The wind subcommittee is chaired by Tom Fair, Executive Renewable Energy, Sierra Pacific Power Company and Nevada Power Company. Wind subcommittee members include Jeneane Harter, Tim Carlson (President, Powered by Renewables), Gary Wood (Renewable Energy Program Manager, and Southern Nevada Water Authority and Las Vegas Valley Water). Tim Carlson and Tom Fair are members of the Nevada Renewable Energy and Energy Conservation Task Force.

Renewable Energy Legislation Update

During the 2007 session of the Nevada legislature, the Nevada Wind Working Group worked with the Nevada Renewable Energy and Energy Conservation Task Force, Sierra Pacific Power Company, Nevada Power Company, and various legislators to pass legislation creating a Wind Energy System Demonstration Program. The program is based on the state's highly successful Solar Energy Systems Demonstration Program. A copy of the legislation can be found at www.leg.state.nv.us/74th/Bills/SB/SB437_EN.pdf. The Public Utilities Commission of Nevada has opened Docket Number 07-06026 to establish the program regulations.

Nevada Wind Working Group: <http://energy.state.nv.us/work-groups/wind/default.htm>

New Jersey

The Office of Clean Energy, administered by the New Jersey Board of Public Utilities, has organized the New Jersey Small Wind Working Group (NJSWWG) for small wind energy systems. The NJSWWG has assembled key wind stakeholders including environmental groups, federal and state agency organizations, private and non-profit organizations, rural agriculture organizations, vendors, and New Jersey institutions of higher education representatives. Since its kickoff in October 2006, the NJSWWG has met five times and has drafted a Model Ordinance for Small Wind Energy Systems for municipalities.

Under the State-Based Anemometer Loan Program (SBALP) funded by Wind Powering America, the New Jersey Board of Public Utilities subcontracted with Rutgers and Rowan Universities. The universities installed four anemometers and leveraged several other anemometers across New Jersey and are currently collecting data. Due to the popularity of the SBALP, the New Jersey Clean Energy Program is proposing to fund

additional anemometers and partner with additional universities. Information regarding the NJSWWG and the Anemometer Loan Program can be found at www.njcleanenergy.com/renewable-energy/technologies/wind/wind-working-group/wind-working-group.

New Jersey Wind Working Group: www.rowan.edu/colleges/engineering/clinics/windworking/njwwg_homepage.htm

New Mexico

Wes Perrin, a Wind Working Group representative, conducted four community wind workshops in the towns of Roswell, Clovis, Las Cruces, and Roy. Perrin also made a presentation on community wind development and staffed a wind exhibit at the summer Dairy Producers Trade Show in Ruidoso.

Renewable Energy Legislation Update

New Mexico increased the requirements for its Renewable Portfolio Standard from 15% to 20% by 2020. Rural electric cooperatives must get 5% of their electricity from renewable resources by 2015, increasing to 10% by 2020.

North Carolina

The North Carolina Small Wind Initiative at Appalachian State University (ASU) organized, advertised, and conducted three small wind workshops at the Small Wind Research and Demonstration Facility on Beech Mountain. Three new turbines were installed at the site: two Southwest Windpower Skystreams (one on a 70-foot tilt-up tower and one on a 35-foot monopole) and one ARE 110 on a 106-foot tilt-up tower.

The group continues to administer the Western North Carolina Anemometer Loan Program with five 5-meter to 20-meter towers installed (including one for North Carolina Congressman Heath Shuler).

In addition, ASU team members:

- Made at least 15 wind-related presentations at various conferences and meetings
- Continued to maintain and improve the ASU wind Web site (www.wind.appstate.edu)
- Worked with Ashe County and the town of Blowing Rock on permitting or regulatory ordinances related to wind energy
- Organized, advertised, and held a workshop on Wind Energy Impact Assessment with James Sinclair from Texas
- Conducted individual site assessments and wind consultations with more than 50 individuals.

North Carolina Wind Working Groups: www.ncsc.ncsu.edu/programs/The_Coastal_Wind_Initiative.cfm and www.wind.appstate.edu/wwg.php



Brent Summerville/PX15301

The team from Appalachian State University installs an anemometer tower at U.S. Representative Heath Shuler's home in western North Carolina as part of the WNC Anemometer Loan Program.

North Dakota

North Dakota is developing a siting guidebook for 100 MW or smaller wind generation in the state. The Energy Office also hosted a 1-day workshop for parties interested in learning how to proceed with developing wind resources.

New Wind Energy Projects

North Dakota will surpass 500 MW of installed capacity by the end of 2008. The 159-MW Cavalier County project currently under construction will add an additional 27 turbines, or 40.5 MW. In addition, Xcel Energy has announced its intention to develop 200 MW of additional capacity by 2011, and Basin Electric Power Cooperative has indicated its intention to develop 99 MW south of Minot by 2010. Other announced projects total more than 400 MW.

Renewable Energy Legislation Update

The legislative session that ended in April 2007 resulted in legislation designed to move the wind industry forward. Various tax incentives were modified so that utility companies and wind developers could take full advantage of them. The incentives can be viewed at www.nd.gov/tax/genpubs/business-incentives.pdf. The legislature also passed a renewable energy fund of \$3 million in matching grant dollars for the biennium to assist with renewable energy research and development.

New Wind-Related Economic Development

North Dakota is home to two major wind component manufacturers, DMI of West Fargo (tubular towers) and LM Glasfiber of Grand Forks (blades). Both expanded their operations in the past year and added a significant number of new employees. Between the two businesses, more than 1000 North Dakotans are employed in good-paying manufacturing jobs. In addition, Wanzek Construction of Fargo/West Fargo is a major installer of wind projects in the area and throughout the Great Plains region.

Ohio

Tom Maves of the Ohio Office of Energy Efficiency continues to host regular Wind Working Group meetings and publish newsletters and a Web site (www.ohiowind.org).

Ohio's recent wind production and manufacturing incentive program received 16 letters of intent representing 33 projects totaling 700 MW of wind. Approved projects will receive production incentives. Categories include utility-scale projects (over 5 MW) and community-owned (500 kW up to 5 MW).

Champaign and Logan Counties are convening a panel to establish standard zoning rules for wind projects.

Ohio Wind Working Group: www.ohiowind.org/

Oklahoma

The Oklahoma Wind Power Initiative (OWPI) team conducted several important outreach events in FY07, including:

- Presented to approximately 200 people at the Women in Agriculture conference in Oklahoma City
- Presented to approximately 50 tribal members at the Native American Energy and Minerals Institute regarding renewable energy options for Oklahoma tribes at the Cherokee Casino in Catoosa
- Staffed a wind power exhibit at the Oklahoma State Fair (100,000+ attendees) and handed out about 2,000 buttons, posters, flyers, etc.).

In addition, the OWPI team published a community wind guidebook in October 2006, received an EPA grant for renewable education in November 2006, and revised the OWPI Web site in

January 2007. Also, Wind Today magazine published the OWPI wind resource map in 2007.

In September 2006, the Environmental Verification and Analysis Center at the University of Oklahoma mailed a survey questionnaire to all Oklahoma state agencies to ascertain their interest level in various emerging energy technologies. Of the 382 survey questionnaires mailed, 25 were determined to be of use to this study. The overwhelming majority of the agency respondents was supportive of the development of innovative energy technologies and clean energy resources in Oklahoma. Several of the surveys included letters of support for the development of renewable energy.

Oregon

While the large wind farm developers continue to develop large wind farms at a rapid pace, the community wind farm development has been stalled by the lack of available wind turbines. Oregon currently has an estimated 100 MW of community wind farms in various stages of development, but none of them have been completed because of an inability to obtain wind turbines. Several community stakeholders are working together to try to resolve this issue. The Oregon community stakeholders believe that this is the most important issue facing wind energy advocates and that a solution must be found on a national level.

Renewable Energy Legislation Update

An RPS was passed during this year's legislative session. The bill requires that 25% of Oregon's electric load come from new renewable energy by 2025. The RPS sets interim targets of 5% by 2011, 15% by 2015, and 20% by 2020. The RPS requirement of 25% by 2025 applies to electric utilities and any electricity service suppliers that serve at least 3% of Oregon's electric load. This covers Oregon's three largest electric utilities with more than 75% of Oregon's electric load. Depending on load growth, this will likely cover most of the new resources needed to meet these utilities' new load.

As part of this RPS statute, the Public Purpose Charge is extended through 2025. And most important for community wind, the renewable energy portion of the public purpose charge is now limited to small-scale renewable energy projects 20 MW or less to encourage a diversity of the types of renewable energy resources developed.

The limit for nonresidential net metering customers has been raised to 2 MW, based on nameplate capacity. The new rules retain a 25-kW limit for residential net metering customers.

The tax credit for renewable energy systems installed by businesses (Business Energy Tax Credit, or BETC) has been increased from 35% to 50% (taken over 5 years) and the project cost limit from \$10 million to \$20 million. The revised statute also provides that the costs of constructing facilities to

manufacture renewable energy systems and components are eligible for the increased tax credit for renewable energy.

The revised statute for the Residential Energy Tax Credit (RETC) increases the maximum tax credit for wind generation from \$1,500 to \$6,000 over 4 years (maximum of \$1,500 per year).

The actual credit amount is calculated by multiplying the estimated annual energy production in kWh by \$2.00. It also allows use of the residential energy tax credit for more than one qualifying item in the same year (e.g., for a solar water heater and for a wind electric system, and/or for multiple energy-efficient appliances).

A working group has formulated draft rules for interconnection of small generators of 10 MW or less. Formal rule making will start in November 2007 with completion expected by the end of 2007. The draft rules are similar but not identical to the FERC Small Generator Rules.

Oregon Wind Working Group: <http://egov.oregon.gov/ENERGY/RENEW/Wind/OWWG/OWWG.shtml>

Pennsylvania

The Pennsylvania Wind Assessment Program (PennWAP), managed by the Renewable Energy Center at St. Francis University, is collecting data at six towers and has identified two sites that show significant potential. They've begun a partnership with the Small Business Development Center to enable better consulting services to clients once the resource assessments are completed. The goal is to create community-owned wind projects in Pennsylvania. PennWAP held the first annual Borrowers' Workshop on March 21, 2007 to train the six current clients.

The Pennsylvania Wind and Wildlife Collaborative has been meeting approximately monthly since it was formed in 2006. The mission of the collaborative is to engage federal and state environmental agencies, nongovernmental conservation organizations, and the wind industry in a collaborative, consensus-based process to collect, share, review, and use the best available science, data, and professional expertise to address how best to assist in the development of wind energy in Pennsylvania in an environmentally responsible manner. A Technical Workshop was held January 23-24, 2007 to discuss Pennsylvania's wildlife and habitats, site assessment tools, impact assessments, and post-construction management and mitigation options. The collaborative was critical to the development of a Voluntary Wind Energy Cooperative Agreement between the Pennsylvania Game Commission and Wind Energy Development Companies to address pre- and post-construction monitoring for birds and bats. Nineteen companies active in wind development in Pennsylvania have signed on since the agreement was finalized in April 2007.

Citizens for Pennsylvania's Future held a Wind Advocates Retreat April 18-19, 2007 to educate and mobilize wind energy supporters in the Mid-Atlantic Region. Advocates learned about wind development, the current status of wind-related issues such as tax legislation and wildlife, and how to best deliver a positive message about wind energy.

Renewable Energy Legislation Update

Governor Rendell signed Act 35 in July, which increases the limit for net metering up to 3 MW, or 5 MW for customers who make their systems available to operate in parallel with the electric utility during grid emergencies. This high net-metering limit greatly improves the economics of community-owned wind power projects.

New Wind Energy School Programs

PennWAP is also involved in educating students at St. Francis University. Several faculty members worked with students on projects related to potential community wind projects. For example, a faculty-student project resulted in a computer program that automates wind data analysis by analyzing raw data for errors and producing easily understandable graphs and tables.

Pennsylvania Wind Working Group: www.pawindenergynow.org/wwg/index.html

Puerto Rico

Representatives of Puerto Rico and the U.S. Virgin Islands participated in a conference call with Phil Dougherty (DOE), Jose Zayas (Sandia National Laboratory), Steve Palomo (DOE), and Dwight Bailey (National Energy Technology Laboratory) to set the stage for a wind map roll-out workshop on the islands. The SEO indicated that electric utility company PREPA will sign a power purchase agreement with a private 42-MW wind farm to be developed in Guayanilla (on the southwest side of the island). There may also be potential for smaller, community wind systems to be installed. As a result of this conference call, a wind workshop is planned in San Juan in January 2008.

South Dakota

Due in part to continued strong key stakeholder education and outreach initiatives, wind development is accelerating within the state. The Public Utility Commission and the Governor's Office, with support from Wind Powering America, hosted numerous rural town meetings, legislative briefings, and other key stakeholder briefings throughout the year. Key stakeholders, including Governor Rounds, are now strong supporters of wind development. Rounds and Heartland Consumers Power District recently signed a memorandum of understanding to encourage wind power development. The agreement states that South Dakota wind energy will now be used for additional power needs at South Dakota State University and the University of South Dakota.

New Wind Energy Projects

The state's largest wind farm (50 MW in Brooking County) is under construction, and two proposed projects are under development, totaling more than 200 MW.

Renewable Energy Legislation Update

The state legislature passed key legislation, including allowing utilities to make slight rate increases to pay for new transmission lines.

Tennessee

The Tennessee Wind Working Group (TNWWG) completed the first year of its anemometer loan program, sharing the data with the town of Jonesborough. The town will use its data to justify the purchase of a wind turbine. This data will give Jonesborough, the state's oldest community, the opportunity to become the first town in Tennessee to use wind energy to power town properties. The anemometer from Jonesborough was moved to the Highlander Center in New Market to analyze its wind resource. The hope is that the wind resource is strong enough to use a wind turbine to power a new, LEED-certified building being constructed at the Highlander Center.

The TNWWG hosted multiple, free residential wind workshops in the towns of Cleveland and Crossville. These free, all-day events brought together key stakeholders of the TNWWG, including utility, industry, and government representatives, to provide education to residents interested in beginning a small wind project in their community. The TNWWG also provided consultation to businesses and utilities interested in including wind energy in their portfolios. These meetings resulted in a high number of applicants for the Tennessee Anemometer Loan Program. To meet demand, the TNWWG is currently in the process of obtaining an NREL-validated Tennessee wind resource map.

The TNWWG is a cohesive partnership made up of the State Energy Office, Tennessee Valley Authority, commercial wind businesses, municipalities, non-profits, and other key stakeholders in Tennessee. The TNWWG is co-directed by Rick Carson of the Tennessee Valley Authority and Brandon Blevins, the Wind Program Coordinator for the Southern Alliance for Clean Energy.

Texas

Texas Tech University, through its Wind Science and Engineering Research Center and its Water Resources Center, is designing and performing initial characterization tests on a prototype, integrated wind-water system. The system uses an existing grid-connected 5-kW wind turbine as the primary energy source. The electricity from the turbine will drive a reverse osmosis water desalination unit. The system is located on an instrumented 67-acre wind research site maintained by Texas Tech at the Reese Technology

Center (located about 7 miles west of Lubbock). The system will: 1) serve as a prototype for larger wind-water systems, 2) help identify system integration and operational issues, and 3) serve as a research and educational vehicle for students and faculty. This project is funded through a State Energy Program Special Project Grant.

New Wind Energy Projects

The Texas General Land Office (GLO) is seeking bids for a competitive lease sale for the rights to develop offshore wind power in the Gulf of Mexico. According to the GLO, four offshore tracts will be leased for wind power development, and other coastal and upland tracts will be leased for the exploration and production of oil, gas, and minerals.

BP Alternative Energy has broken ground on Silver Star I, the developer's first wind project in Texas. The project, located 80 miles southwest of the Dallas/Fort Worth metropolitan area, will have a capacity of 60 MW and is owned by BP (85%) and by Clipper Windpower (15%).

DeWind Inc., a subsidiary of Composite Technology Corp., has signed a memorandum of intent with the city of Sweetwater to establish a wind turbine demonstration site on city-owned land. In association with Texas State Technical College, the company plans to install its 2-MW, 60-Hz DeWind D8.2 prototype on the Sweetwater site by fall 2007. Further development and prototype turbines will be installed at the site over the next 5 years.

New Wind Energy School Programs

The Texas Higher Education Coordinating Board has approved Texas Tech University's proposed doctor of philosophy in wind science and engineering, which is among the first of such programs in the United States, according to the university. The degree, which incorporates the study of both wind energy and windstorm damage, will be taught through Texas Tech's colleges of engineering, architecture, and arts and sciences and will be administered by the graduate school.

Utah

In September 2007, the Utah State Energy Program (SEP) provided a report of Utah's wind technical development potential, as well as near-term economic costs associated with 32 hypothetical developments in Utah. Data from the anemometer loan program and from Utah wind developers were used to provide an accurate snapshot of Utah's wind development potential and associated costs. The SEP collaborated with wind consultants and developers in the industry to gain consensus on the report's findings.

Renewable Energy Legislation Update

During the 2007 legislative session, the Utah legislature renewed the state investment tax credit for small wind projects and created



Andy Swapp

Andy Swapp, teacher at Milford High School in Milford, Utah, changes the data card from the met tower as his mule Melagro reads the instructions to him.

a new state production tax credit of 35 cents per kWh to supplement the federal tax credit for utility-scale wind projects. The SEP provided technical information to the bill sponsors, which helped them to understand the technology and the economic impacts of the tax credit. Additionally, Utah Clean Energy (UCE) is working to improve Utah's net metering program to better support small wind projects.

New Wind Energy School Programs

The SEP, UCE, and the Utah State Office of Education (USOE) are collaborating on a Wind for Schools Program. UCE secured funding from Rocky Mountain Power to support the installation of three small wind turbines on K-12 campuses in Utah. The SEP is providing technical assistance on choosing schools with the best wind resources and siting issues and is working to develop curriculum with UCE and USOE. The turbines and associated programs are scheduled to go online in 2008.

FY07 Publication

Working in conjunction with Utah State University staff, the WPA communication team edited and produced *Utah Perspectives from the Second Annual Harvesting Energy Summit (2007): Outcomes from the 'Dialogue Diner' and Stakeholder Panel Sessions*.

Utah Wind Working Group: <http://geology.utah.gov/sep/wind/uwug/index.htm>

Vermont

Through the Vermont Small-Scale Wind Energy Demonstration Program, the Vermont Department of Public Service (DPS) has assisted 18 Vermont grade schools, universities, municipalities, and state facilities in installing wind turbine systems on their properties, as well as providing wind resource measurement equipment for businesses considering a small wind system. The program's objectives include:

- Increasing the awareness of wind energy as a viable source of alternative electric generation in Vermont
- Accelerating and increasing the market demand for high-quality small wind systems
- Ensuring the most comprehensive understanding of the wind resource at a prospective site by providing wind measurement equipment to those considering the installation of small wind systems
- Educating the public on the advantages of wind energy technology at various locations by presenting accurate data from production and meteorological monitoring activities on a Web site (www.vtwindprogram.org).

Administered through Vermont Technical College, the Vermont Anemometer Loan Program (VTALP) involves faculty and students who install 30-meter tilt-up meteorological towers, collect and analyze the data, and generate a wind resource report for each site. The goal is to continue installing and decommissioning seven towers a year, totaling 21 over a 3-year timeframe. The VTC is developing and expanding county wind resource maps.

Vermont's Small Turbine Residential Incentive Program has helped encourage installation of 23 residential turbines in the past year, ranging from a 0.9-kW Southwest Windpower model to a 10-kW Bergey XL-S.

New Wind Energy Projects

After 10 years with no utility-scale wind project approvals, Vermont recently approved a new wind farm comprised of 16 2.5-MW Clipper turbines.

Virginia

Members of the Virginia Wind Energy Collaborative (VWEC) provided technical support to the Virginia Department of Environmental Quality, the Virginia Air Pollution Control Board, and the Metropolitan Washington Air Quality Committee (MWAQC), an organization representing state and local jurisdictions in the DC-Maryland-Virginia ozone non-attainment area. This work led to a sevenfold increase in the amount of wind Renewable Energy Credits (RECs) purchased by Virginia municipalities between 2004 and 2009 as part of the State Implementation Plan to meet the national air quality standard for ozone. This wind purchase was spurred by a related success of the VWEC team in winning approval of the first-ever Virginia regulation allocating nitrogen oxide allowances to renewable energy projects. This Clean Air Interstate Rule was approved by the Virginia Air Pollution Control Board on December 6, 2006, and it was finalized in March 2007.

The Virginia State-Based Anemometer Loan Program (SBALP) completed most of its most recent 20-m measurement exercises and acquired several 50-m NRG measurement systems. This acquisition marks the beginning of an expansion of its mission (serving primarily private landowners and small businesses) to serve a broader audience. The Virginia SBALP will be equipped in 2007–2008 to support measurements at federal facilities and on BLM lands, at sites that are appropriate for community-scale wind projects, and throughout coastal zones.

Members of the VWEC participated in the formation of The Virginia Coastal Energy Research Consortium (VCERC), established with the enactment of Virginia Senate Bill 262 in 2006, which also called for a comprehensive energy plan for Virginia. The VCERC will serve as an interdisciplinary study, research, and information resource on coastal energy issues. The charter institutions of VCERC are James Madison University, Norfolk State University, Old Dominion University, the Virginia Institute of Marine Science, and the Virginia Tech Advanced Research Institute. The 2007 General Assembly passed a \$1.5 million appropriation to initiate activities that include feasibility-level design and assessment for offshore wind power, preliminary mapping of offshore areas, evaluation of economic development impact of commercial offshore wind power development, and feasibility-level design and economic assessment for a biodiesel algae culture system.

Renewable Energy Legislation Update

Prior to the 2007 Virginia General Assembly, a broad coalition of environmental, utility, and consumer groups gathered to discuss legislation to create a Renewable Portfolio Standard (RPS) for the Commonwealth. These stakeholders, including VWEC members, identified preferred technologies and appropriate levels of renewable generation that could be assigned as goals for the RPS.

Virginia Wind Working Group: <http://vwec.cisat.jmu.edu/>

Virgin Islands

The U.S. Virgin Islands territory (comprised of St. Johns, St. Croix, St. Thomas, and Water Island) has an existing installed generating capacity of ~318 MW. The Water and Power Authority (the local utility that provides water and electricity services throughout the islands) has developed a 10-year plan for new generation capacity and energy diversification. Including energy conservation efforts, the utility expects load growth to increase 2% per year on average over the next 10 years. As part of its strategy to meet demand, the utility is modestly projecting wind capacity at 10 MW by 2009 and an additional 10 MW by 2014, for a total of 20 MW.

High fuel-adjustment costs (which led to a levelized COE ~ 33¢/kWh), a recently enacted net metering bill, and a \$3,500/system rebate have resulted in a high level of interest in small wind systems on the islands.

Washington

Utility-scale wind farm growth continues at a sustainable rate, and efforts are now focused on small wind and community-scale systems.

West Virginia

The West Virginia Wind Working Group met in September 2007 at the Canaan Valley Resort and Conference Center in Davis. Fifty persons attended presentations on a diverse set of wind energy topics, including a review of litigation and regulatory activity regarding wind energy, a review of recent tax legislation impacting wind energy, a summary of a recent survey of attitudes on wind energy and other renewable resources, a summary of the National Academy of Sciences report on wind energy and the environment, a summary of the Energy Opportunities document prepared by the West Virginia Division of Energy, a summary of the wind energy experience in Virginia, and three updates on wind energy projects permitted by the Public Service Commission.

Several members of the West Virginia Wind Working Group participated in a forum on Renewable Energy sponsored by the West Virginia Division of Energy and the Public Energy Authority in September 2007 in Charleston. Coordinator Patrick Mann gave a presentation on the status of wind energy in the state, including a discussion of future developments and issues.

Wisconsin

The State of Wisconsin created a new Office of Energy Independence to serve as a single point of contact for citizens, businesses, local government, and non-governmental organizations pursuing energy efficiency and renewable energy. It will also serve as the State Energy Office.

The Wisconsin Wind Working Group held a kick-off meeting in Milwaukee. RENEW's Michael Vickerman facilitated the meeting, which attracted more than 30 participants.

In September 2007, RENEW staff and EcoEnergy LLC hosted a wind energy booth at the Calumet County Fair throughout the Labor Day weekend. Also, the Wisconsin State Journal published a guest column by Vickerman calling on state legislators to reform the way wind energy projects under 100 MW are permitted (www.madison.com/wsj/home/column/other/index.php?ntid=210066&ntpid=5).

RENEW prepared a guest column for the *Chilton Times-Journal* advocating wind energy development in Calumet County.

Renewable Energy Legislation Update

Wisconsin Public Power Inc. (WPPI) expects to be 6 years ahead of schedule in meeting the State of Wisconsin requirements that at least 10% of electricity purchased by retail customers be supplied from renewable resources by 2015. WPPI has plans for an additional 150 MW of capacity from renewable resources, including 24 MW from utility-scale wind generators in several communities and community-based wind turbine installations that will supply power for about 6,400 homes annually.

In September 2007, AWEA's Jeff Anthony was invited to present a "sneak preview" of the 20% by 2030 Wind Energy Vision to the Governor's Global Warming Task Force (<http://dnr.wi.gov/environmentprotect/gtfgw/documents/MhWGEG20070918.pdf>).

This road map will enable this workgroup to formulate policy recommendations for increasing the state's renewable energy standard after 2015, when the current Wisconsin RPS expires. The workgroup expects more than 80% of post-2015 renewable energy to be derived from wind.

Wyoming

In the past year, the Wyoming Wind Working Group sponsored workshops in Laramie, Wheatland, Douglas, Casper, and Prairie Center. These workshops are mostly designed to provide landowners with information on wind development potential and tips for negotiating agreements with developers. Many citizens are becoming interested in wind and are participating in the anemometer loan program to collect data. As a result of these workshops, landowner cooperatives have been formed to collectively negotiate deals. One of these cooperatives was successful enough to generate competitive bidding for their rights for wind development.

The Wind Working Group also was a significant partner in the annual state-wide renewable energy conference, Roping the Wind. This year's conference, held for the fourth year, included presentations on small wind, wind development issues for landowners, transmission updates, and a keynote from Rich Walje, president of Rocky Mountain Power.

The Wind Working Group quarterly meetings have provided opportunities for interested parties to join in discussions with presenters and tour wind sites. The group toured the inside of Clipper Wind's 2.5-MW Liberty turbine near Medicine Bow and also visited TMA's test site near Cheyenne and looked at the vertical-axis wind turbine.

The State Energy Office continues to manage a busy anemometer loan program that has been supported by the working group.

WPA Activities at NREL

Ag Outreach



Dan McGuire

WPA contractors Dan McGuire and Tom Potter discuss the rural economic benefits of wind energy at the Farm Progress Show in Decatur, Illinois, in August 2007.

The Wind Powering America team at NREL continues to develop and strengthen alliances with the agricultural sector and organizational alliances, including 25x'25, the American Corn Growers Foundation, and the National Association of Counties. Members focused on an increased presence at agricultural events in FY07:

- National Future Farmers of America Conference, Indianapolis, Indiana
- Advancing Renewable Energy: An American Rural Renaissance, St. Louis, Missouri
- National Agricultural Bankers Conference, Las Vegas, Nevada
- National Association of Farm Broadcasters Trade Talk, Kansas City, Missouri
- Midwest Energy Independence: Taking Ownership, St. Paul, Minnesota
- Harvesting Clean Energy, Boise, Idaho
- Rural Prosperity Through Renewable Energy: 2007 Harvesting Energy Summit, Salt Lake City, Utah
- 25x'25 Third Annual Summit, Washington, DC
- 2007 Commodity Classic, Tampa, Florida

- USDA National Renewable Energy Conference for Agricultural Extension Agents, Golden, Colorado
- Farm Progress Show, Decatur, Illinois.

Also, WPA pursued a new outreach method in FY07 by contracting and working with the National Association of Farm Broadcasters (NAFB) to provide monthly wind energy interviews for use on rural radio stations. The first two interviews featured WPA technical director Larry Flowers and John Stulp, the Colorado Commissioner of Agriculture who was the Prowers County Commissioner during the development of the 162-MW Colorado Green Wind Farm. Monthly interviews are planned for FY08.

NREL lead: Marguerite Kelly

FY07 publications: *Wind Energy Guide for County Commissioners* (available as a PDF download at www.windpoweringamerica.gov/pdfs/wpa/county_commissioners.pdf)

Air Quality

DJ Consulting LLC and Resource Systems Group (RSG) are preparing a report summarizing key issues surrounding the air emissions benefits of wind—the myths and the reality. The paper will cover the key emissions avoided, such as CO₂, NO_x, SO_x, and mercury, and discuss how wind reduces air emissions, and when the emissions benefits of wind can be limited, such as with cap and trade programs. It will also briefly discuss issues related to calculating emissions benefits and describe various available methodologies. The report will be published in early 2008.

NREL lead: Lori Bird

NREL contractors: DJ Consulting LLC, Resource Systems Group

Communications

In addition to assisting with the outreach efforts described in each section in the WPA Activities at NREL chapter of this report, in FY07 WPA distributed more than 11,500 copies of WPA publications to State Wind Working Groups and various outreach events.

NREL lead: Ruth Baranowski

NREL contractors: National Association of Farm Broadcasters, Julie Cardinal, Sustainable Energy Advantage LLC

6th Annual WPA All-States Summit Awards

The 6th Annual WPA All-States Summit in Los Angeles attracted more than 140 members of national and state public- and private-sector organizations from 39 U.S. states and Canada. The following awards were presented:

Young Wind Advocate Award:

Mike Costanti

Outstanding State Wind Working Group:

Oklahoma Wind Power Initiative

Small Wind Advocate:

Mick Sagrillo

Friend of the Program Award:

Ed DeMeo

Outstanding Institutional Partner Award:

Wind Energy Works!

Western Regional Wind Advocacy Award:

Brian Jackson, G3 LLC

Eastern Regional Wind Advocacy Award:

Jonathan Miles, James Madison University

Midwest Regional Wind Advocacy Award:

Rich VanderVeen, Mackinaw Power LLC



Robert Gough

Mike Costanti (left) receives the Young Wind Advocate Award from WPA technical director Larry Flowers at the 6th Annual WPA All-States Summit in Los Angeles in June 2007.



Robert Gough

Jonathan Miles (left) receives the Eastern Regional Wind Advocacy Award from WPA technical director Larry Flowers at the 6th Annual WPA All-States Summit in Los Angeles in June 2007 as national coordinator Phil Dougherty looks on.

Distributed Wind

WPA team members furthered the development of distributed wind turbines (DWTs) across the United States by continuing to work with diverse stakeholders in FY07.

American Solar Energy Society (ASES)

- Trudy Forsyth served on the National Organizing Committee for the American Solar Energy Society (ASES) SOLAR 2007 conference in Cleveland. The event's theme was "Sustainable Energy Puts America to Work." Chairman Bill Spratley (also serving with the Ohio Wind Working Group) recognized the formation of a new ASES division on small wind during his plenary speech.
- During the SOLAR 2007 conference, the first small wind technical division gathered. The group focused on two activities: working to include small wind in the ASES Solar Tour and working on zoning issues on a national level.
- As part of the SOLAR 2007 agenda, Jim Green (NREL) and Aaron Godwin (The Renaissance Group) led a full-day workshop on small wind installation.

- The ASES agenda also included a community wind and USDA Farm Bill Forum.
- Numerous small wind papers were included as well, some as part of small wind and community wind sessions. Karin Sinclair (NREL) authored an installer case study on the California local market expansion of small wind that will be used to develop a small wind Jobs and Economic Development Impacts (JEDI) model and future DWT market projections.
- Forsyth is also serving on the National Organizing Committee for ASES 2008 in San Diego.

Rural Stakeholders

Forsyth and Green collaborated with the Rocky Mountain Farmers Union to co-develop an economic tool for small wind. They also gave targeted presentations on Section 9006 of the USDA Farm Bill to audiences in Colorado, Wyoming, and Kansas.



State Energy Office, North Carolina Department of Administration/PIX15307

A 2.5-kW turbine is prominently displayed at a visitors' station at Cape Hatteras National Seashore near Manteo, North Carolina.

State Organizations

Forsyth presented at the Utah Renewable Energy Conference, a Nevada wind conference, and the Interstate Renewable Energy Council (IREC) State Stakeholder Meeting. She also provided expert testimony on net metering with co-ops to the Colorado Legislature's Transportation and Energy Committee.

Installers

- Forsyth and Green presented at the 2007 Small Wind Power Conference in Stevens Point, Wisconsin, on June 12 and 13.
- Forsyth and Mick Sagrillo co-chaired the completion of the North American Board of Certified Energy Practitioners (NABCEP) task analysis of small wind that will lead to testing for certified small wind installers.

Educators

The WPA team worked with the National Energy Education Development (NEED) project to convert KidWind curriculum for a K-12 audience and will continue to work with NEED on future curriculum.

WINDPOWER 2007

- Green, Forsyth, and Sinclair presented a pre-conference workshop, "Personal Wind Systems."
- Forsyth presented "What Part of 20% Does DWT Meet?" (co-author Barbara Farhar), which used diffusion theory to predict the market expansion potential.
- Forsyth presented at the IREC small wind stakeholder meeting preceding the WINDPOWER 2007 conference.

NREL lead: Trudy Forsyth

NREL contractors: Interstate Renewable Energy Council

FY07 publications: Updated small wind consumer's guides for Alaska, Colorado, Hawaii, Illinois, Kansas, Maine, Maryland, Michigan, Minnesota, Montana, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Vermont, Virginia, and Washington, as well as updated Spanish versions of the U.S. and New Mexico guides. All consumer's guides are available as PDF downloads from the Small Wind section of the WPA Web site at www.windpoweringamerica.gov/small_wind.asp

Economic Development Research

Suzanne Tegen and Eric Lantz used the Job and Economic Development Impacts (JEDI) model to perform jobs and economic analyses for the 20% Wind Energy by 2030 Scenario. Marguerite Kelly and Tegen are working with Marshall Goldberg of MRG & Associates and the National Energy Technology Laboratory to verify the coal and natural gas JEDI models and to eventually co-release them for public use. At the beginning of the year, Tegen and Lantz researched the economic development impacts and benefits from the Western Governors' Association's Scenario 3 by its Clean and Diversified Energy Advisory Committee.

NREL lead: Suzanne Tegen

NREL contractors: MRG & Associates

NREL interns: Eric Lantz, Frank Oteri

FEMP and Federal Lands

The U.S. Coast Guard partnered with NREL to purchase a full set of wind monitoring equipment and install it on a large, triangular, 105-m communications tower at Cape May, New Jersey in September. The equipment includes three sets of anemometers, several wind vanes, a temperature sensor, and a barometric pressure sensor.

NREL provided the Army National Guard at Fort Carson, Colorado, with a 50-m met tower that will be installed on a ridge above the base. In addition, three 20-m met towers are currently installed: two for the U.S. Forest Service (Grand Mesa, Colorado and Twin Lakes, Colorado) and one for the U.S. Coast Guard (Kodiak, Alaska).



The U.S. Coast Guard's 105-m tower at Cape May, New Jersey, is now fully outfitted with anemometers and wind vanes.

NREL is working with the Army National Guard on Cape Cod, Massachusetts, and TetraTech on three wind turbine projects, each in the 50-kW to 200-kW range. In May, Global Energy Concepts and NREL staff conducted a site visit to Navy facilities in Guam to identify potential met tower sites. Three potential sites were identified for wind resource assessment, and the met tower procurement is currently underway.

NREL lead: Robi Robichaud

Native American Program

During FY07, a number of tribes utilized WPA’s Native American Anemometer Loan Program.

Installation completed	
Hualapai, Peach Spring, AZ	50-m tower
Ojibwe of Bay Mills, Brimley, MI	50-m tower
Ojibwe of Grand Portage, Grand Portage, MN	50-m tower
Wind River Reservation, Ethete, WY	20-m tower
Fork Belknap Indian Community, Fort Belknap, MT	20-m tower
Point Lay, Point Lay, AK	30-m tower
Keweenaw Bay Indian Community, L’Anse, MI	20-m tower
Native Village of Eyak, Cordova, AK	30-m tower
Wells Band, Wells, NV	20-m tower
Timbisha, Scotty’s Junction, NV	50-m tower
Installation in process	
Yurok, Klamath, CA	40-m tower
Seneca, Salamanca, NY	50-m tower
Wampanoag, Aquinnah, MA	50-m tower

In addition to WPA’s anemometer loan activities, contractor Robert Gough of the Intertribal Council on Utility Policy (COUP) continued his wind energy outreach efforts to Native Americans in FY07. Highlights include the following events.

National Congress of American Indians, Annual Conference, Sacramento, California

Gough provided two presentations: Climate Change and Indian Country Impacts and Solutions - Global Warming and Alternative Energy Development. During the Tribal Environmental Issues Breakout Session, challenges for tribal leaders were discussed: preserving and protecting homelands through adoption and implementation of tribal regulatory codes, the potential barriers in enforcement, and providing insight into current environmental pollution impacting tribal communities and how some of the problems are being addressed.

A Tribal Lands Climate Conference, Somerton, Arizona, and the AWEA Finance Conference, Phoenix, Arizona

The Cocopah Indian Tribe hosted the Tribal Lands Climate Conference in conjunction with the National Wildlife Federation’s Tribal Lands Conservation Program and Intertribal COUP. The event attracted representatives from more than 50 tribes from throughout the Southwest, Northwest, Midwest, and Alaska, along with political leaders, climate scientists, renewable energy experts, and NGOs to exchange ideas on proactively addressing climate change. Gough assisted from the initial planning stages to incorporate renewable energy (particularly wind power), helped to provide tribal outreach, and gave a presentation on tribal wind power development opportunities as a mitigation measure for the climate change impacts on air, land, and water.

Wells Band Indian Tribes, Wells, Nevada

A 20-m met tower provided by WPA to the Wells Band Indian Tribes was installed on July 10 – 11, 2007. The site, a few miles northwest of Wells, Nevada, is located on BLM land adjacent to Wells Band community housing. Steve Brady coordinated the installation for the Wells Band and was assisted by Aurora Aboite, Samantha Franko, and Motley Gracia. Teresa Dixon from the Elko, Nevada field office attended to verify that archeological resources were not disturbed during the installation. Brian Jackson of Renaissance Engineering provided the technical support and installation services.

Timbisha Tribe, Scotty’s Junction, Nevada

A 50-m met tower provided by WPA to the Timbisha Tribe was installed in September 2007 on tribal land near Scotty’s Junction, Nevada.

The Curtis and Sons crew assess the tower pieces and complete the tilt-up for the Timbisha Tribe.





WPA Native American Program lead Tony Jimenez (aka Major Antonio Jimenez) was deployed to the Middle East in January 2007 to assist in the Iraq reconstruction effort. Robi Robichaud is leading the Native American program effort in Tony's absence.

Tribal Investment Workshop on Renewable Energy Development, Flagstaff, Arizona

Sponsors and participants of this event included Northern Arizona University, Just Transition Coalition, Grand Canyon Trust, Sierra Club, Black Mesa Water Coalition, Native Movement, and Intertribal COUP. Workshop participants explored investment strategies and built an investment taskforce from Navajo and Hopi tribal communities for utilizing Just Transition and other funds for renewable energy development; to build relationships and partnerships among tribal community leaders, renewable energy representatives, business leaders, and investors; and to support communities to develop sustainable economic development strategies at the local level. Gough participated in developing the agenda and outreach for tribal participants and presented on wind energy development opportunities for tribes in the Southwest, especially on the Hopi and Navajo reservations.

Harvesting Clean Energy Conference, Boise, Idaho

Gough provided a WPA tribal wind power presentation and participated in several roundtable discussions with tribal and non-tribal wind advocates.

Aberdeen Area BIA Great Plains Economic Development Conference, Rapid City, South Dakota

Supported by WPA, Intertribal COUP participated in the presentations and WPA display for tribal wind power at the annual Bureau of Indian Affairs economic development conference for the tribes in North and South Dakota, Nebraska, Montana, and Wyoming.

National Native American Economic Development Policy Summit, Phoenix, Arizona

The Office of Indian Energy and Economic Development at the Department of Interior, in collaboration with other federal

agencies, Indian tribes, and tribal organizations such as Intertribal COUP and the National Congress of American Indians, hosted this summit that focused on generating proactive economic policies that will make a real difference for Native economies. Gough participated in the agenda planning and in a panel discussion about the policy challenges associated with building tribal businesses, particularly with regard to opportunities in alternative energy.

Wind Energy Applications Training Symposium (WEATS), Boulder, Colorado

Gough assisted with preparation and outreach for tribal participation and presented.

North Dakota Tribal Leaders and Tribal Councils Summit XI, Bismarck, North Dakota

Gough made two tribal WPA presentations, and Intertribal COUP hosted a dinner meeting for tribal chairmen interested in participating in the Western Area Power Administration's ongoing intertribal wind-hydro integration project study.

Risk Management Strategies for Beginning and Small Farmers and Ranchers Conference: Growing Power: USDA, Milwaukee, Wisconsin

USDA organizers requested that Gough present about tribal wind power and opportunities for Indian farmers and ranchers to ranchers and farmers (Indian and non-Indian) from the Great Lakes, the Great Plains, and the Southwest. He addressed issues about opportunities for individual Indians as well as tribes, given the complex nature of reservation land ownership and the application of funding under the Farm Bill, particularly Section 9006.

Wind On the Wires Meeting, Minneapolis, Minnesota

Gough represented WPA tribal interests on the Wind on the Wires Board and attended a strategic planning meeting to outline approaches on a variety of coordinated wind activities for the coming year.

Southwest Tribal Energy Peer Exchange, Phoenix, Arizona

Gough participated in the 2-day conference and presented a report to tribal participants on the critical WPA and tribal issues. Gough also attended several side meetings with Hopi and Navajo tribal wind power advocates and with the Grand Canyon Trust for financing tribal renewable energy projects.

NREL lead: Tony Jimenez/Robi Robichaud

NREL contractors: Robert Gough, New Mexico State University, Pacific International Center for High Technology Research (PICHTR)



policies and the market environment for effective wind implementation.

In FY07, 3-year contracts were established with regional advocacy groups to conduct the first three RWEIs, and activities are underway. The Southwest RWEI, led by Craig Cox of the CORE Foundation, focuses on the states of Arizona, Nevada, and Utah, and includes others such as Colorado. The Mid-Atlantic/Southeast RWEI, led by Gil Miliar-Hough of the Southern Alliance for Clean Energy, focuses on Maryland, North Carolina, Virginia, and West Virginia. The Great Lakes RWEI, led by Lisa Daniels of Windustry, focuses on Indiana, Michigan, Ohio, and Wisconsin, and includes Minnesota.

Each RWEI will organize two training sessions and several Webcasts per year. This process will enable members of the State Wind Outreach Teams (SWOTs) from each region and other key players to learn from experts how to address wind energy issues that are relevant in their regions. During the spring, each organization held formulation meetings to organize its RWEI and then hosted a regional breakout session at the Wind Powering America Summit in Los Angeles on June 7. Training sessions have been scheduled for FY08, and the first Webcasts are also planned.

NREL lead: Marguerite Kelly

NREL contractors: Craig Cox of the CORE Foundation, Gil Miliar-Hough of the Southern Alliance for Clean Energy, Lisa Daniels of Windustry

State Outreach

Key state outreach accomplishments for FY07 include helping to launch new Wind Working Groups in Wisconsin and Georgia and laying the groundwork for Wind Working Groups in Nebraska, Maine, and Kansas. WPA currently supports the activities of 30 state Wind Working Groups.

In addition, WPA team members participated in regional, national, and state events (for a list of outreach events to the agricultural community, see the ag outreach section at the beginning of the WPA Activities at NREL chapter):

- Western Governors' Association Clean and Diversified Energy Advisory Committee's Western Interstate Water Council, Salt Lake City, Utah
- Great Lakes Wind Collaborative formation meeting, Chicago, Illinois
- Great Lakes Commission Meeting, Chicago, Illinois
- Southwest Renewable Energy Conference, Boulder, Colorado
- National Association of State Energy Officials, Atlanta, Georgia

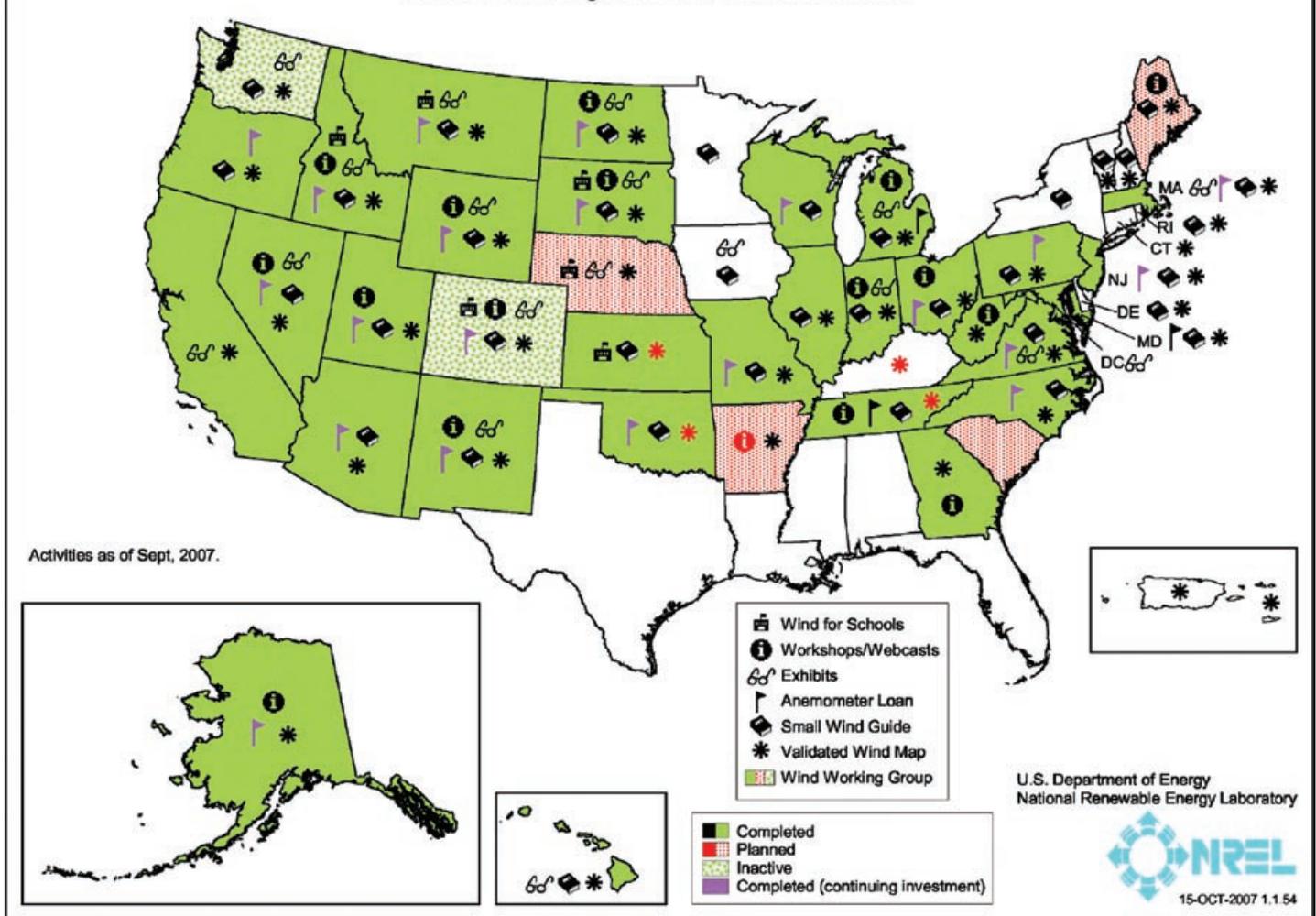
FY07 publications: Spring and Summer 2007 issues of *NAWIG News: The Newsletter of the Native American Wind Interest Group* (available as PDF downloads from www.windpoweringamerica.gov/na_nawig.asp)

Regional Wind Energy Institutes

In order to meet the 20% Wind Energy by 2030 Scenario, most regions of the country will need to substantially ramp up the implementation of wind projects. Certain states require the capacity to address the key issues and barriers in their states. Many of the issues are regional in nature, and states can learn from other states in their region, as well as regional and national experts on special topics.

The WPA program has worked with state and regional organizations to establish Regional Wind Energy Institutes (RWEIs). These train-the-trainer programs help educate individuals in each state to be able to educate others on wind energy issues, barriers, myths, and benefits. The RWEIs work to develop a cadre of outreach specialists in each state that will effectively reach out to audiences of important decision makers (e.g., the ag community, state and local officials, utilities, regulatory bodies) to build understanding, create public acceptance, and eventually impact

Wind Powering America State Activities



- National Conference of State Legislators Great Lakes Wind Institute, Ann Arbor, Michigan
- Alaska Rural Energy Conference, Fairbanks, Alaska
- Utah Energy Summit, Salt Lake City, Utah
- Midwest Renewable Energy Fair, Custer, Wisconsin
- National Association of Counties Conference and Expo, Richmond, Virginia
- Alaska Renewable Energy Fair, Anchorage, Alaska
- 4th Annual American Renewable Energy Day, Aspen, Colorado
- 8th Annual Kansas Renewable Energy Conference, Topeka, Kansas
- Renewable Energy Roundup, Fredericksburg, Texas.

WPA team members also supported events in Montana, North Carolina, Ohio, and Oregon. WPA Technical Director Larry Flowers made presentations in Alaska, Colorado, Idaho, Indiana, Kansas, Michigan, Montana, Nevada, Georgia, New York, Minnesota, Utah, Illinois, and Texas.

NREL lead: Larry Flowers

NREL contractors: Union of Concerned Scientists, Western Resource Advocates, Bob Anderson, Tom Potter, Van Jamison, MRG & Associates, Michael Milligan, Michael Costanti, American Corn Growers Foundation, and Environmental Resources Trust Inc.

Wind for Schools

The WPA team shifted Wind for Schools program activities into high gear this year, expanding the initial work piloted in Colorado to Idaho, Kansas, Nebraska, Montana, and South Dakota.

State-based activities began with the development of Wind Application Centers (fashioned after the existing Industrial Applications Centers), which will provide technical assistance to school wind projects and will eventually become a state focal point for the application of wind energy and training for future wind energy experts. WPA initiated the formation of Wind Applications Centers at six universities: Colorado State University, Boise State University, Kansas State University, Montana State University, University of Nebraska-Lincoln, and South Dakota State University.

The program also identified facilitators in each Wind for Schools state to assist in developing initial projects at identified host K-12

schools. Potential host schools were identified in Kansas, Nebraska, and Montana, and work continued in Colorado. These potential host schools will be analyzed with the expectation that turbines will be installed at appropriate locations in spring 2008. Through the Wind Energy for Educators activities at the Idaho National Laboratory and Boise State University, a Wind for Schools Program model turbine was initiated at Skyline High School in Idaho Falls, Idaho — the first implemented wind for schools project.

The team is also actively working to develop curricula for all education levels. The program’s collaboration with the American Wind Energy Association and the National Energy Education Development Project supports the development of K-12 wind energy curricula, which will be further refined and incorporated into the Wind for Schools host school projects. Additionally, the WPA team is working closely with each of the Wind Application Centers, and especially Colorado State University, to develop a wind applications training curricula that will become the core of a defined wind energy program at each of the academic institutions.

The Wind for Schools program also plans to ensure that any material developed can be applied not only to partner states, but also other organizations from individual schools, school districts, or state energy offices that may not be formally aligned with the Wind for Schools activity but are interested in installing small wind turbines to further the education of their young population. In 2008, the program plans to expand current activities to additional states.

Although just getting up to speed in FY07, the program hopes to engage three to five host schools per state, leading to the installation of small wind turbines and the implementation of science-based wind energy curricula at each school.

The program also held its first Wind for Schools Summit in September 2007, a 3-day event that gathered all of the key state individuals for the first time.

Note: See the Nebraska and Utah summaries for a recap of Wind for Schools program activities in those states.

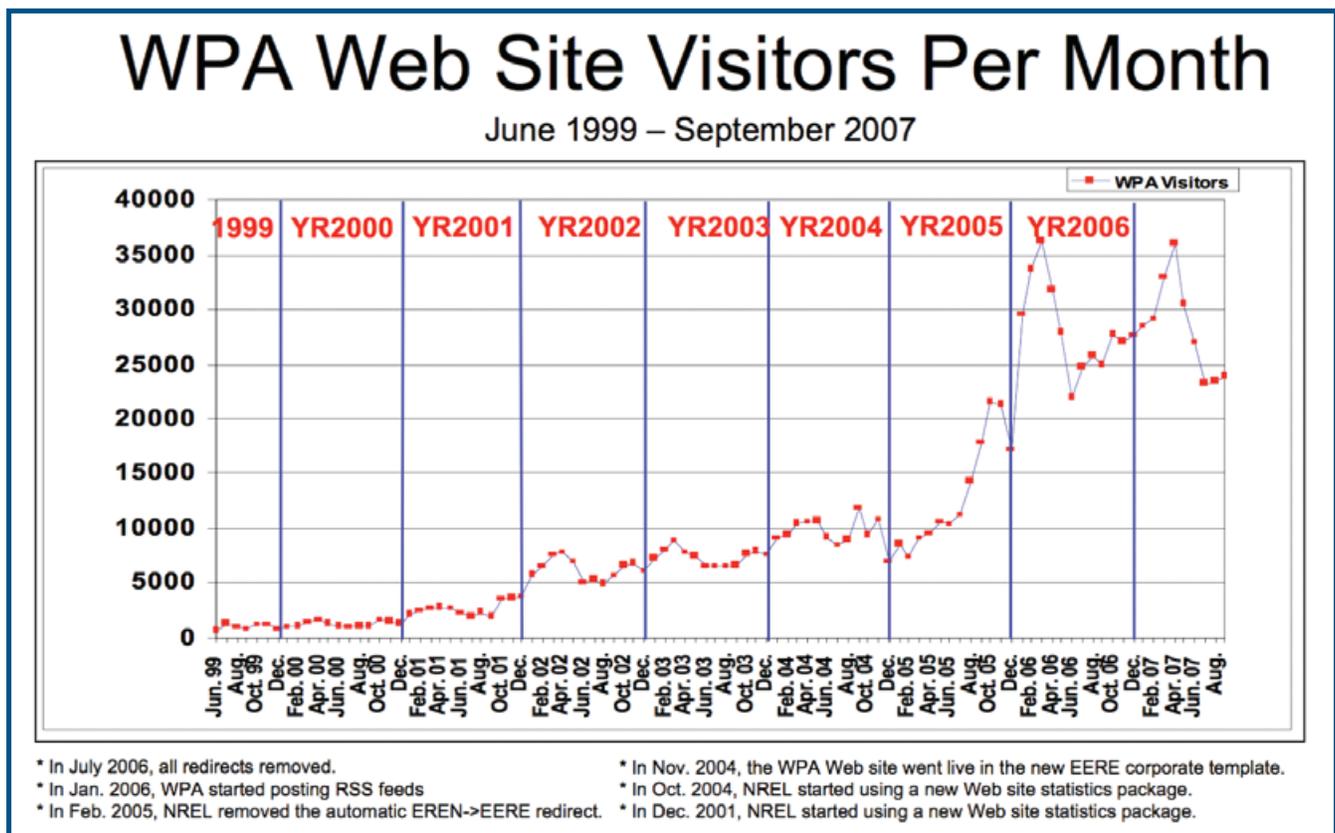
NREL lead: Ian Baring-Gould

FY07 publications: *Wind for Schools Project Power Systems Brief*, a fact sheet that provides technical specifications for the turbine system installed as part of the Wind Powering America Wind for School project. This fact sheet is available as a PDF download at www.windpoweringamerica.gov/pdfs/wpa/schools_wind_brief.pdf

Wind Powering America Web Site

WPA Webmaster Julie Cardinal incorporated the following updates to the WPA Web site (www.windpoweringamerica.gov) in FY07:

- Created animated installed capacity map of the United States at www.windpoweringamerica.gov/wind_installed_capacity.asp, which visually illustrates the growth of installed wind capacity between 1999 and 2007
- Added new sections for audio and video. Users can listen to agricultural wind interviews that are produced by the National



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EERE Home

Wind & Hydropower Technologies Program

About the Program | Program Areas | Information Resources | Financial Opportunities | Technologies | Deployment | Home

Wind Powering America

About Wind Powering America

Program Areas

- State
- Regional
- Siting Wind Turbines
- Native Americans
- Agricultural Sector
- Small Wind
- Public Lands
- Public Power
- Economic Development
- Policy
- Schools

Awards

Perspectives

Resources & Tools

- Anemometer Loans
- Wind Maps
- Videos
- Audio
- Publications
- News
- Events
- Past Events

Wind Powering America is a commitment to dramatically increase the use of wind energy in the United States. This initiative will establish new sources of income for American farmers, Native Americans, and other rural landowners, and meet the growing demand for clean sources of electricity.

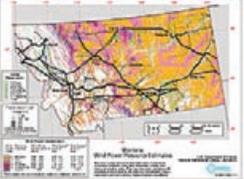
Through Wind Powering America, the United States will achieve targeted regional economic development, enhance our power generation options, protect the local environment, and increase our energy and national security.

State Activities



Wind Powering America concentrates its efforts in "stuck" markets, i.e., avoids investing resources in markets that are fully commercial and active; develops innovative pilot projects; replicates successes; and develops and disseminates targeted information, analyses, and tools — WPA augments the efforts of DOE's wind research program, the American Wind Energy Association (AWEA), and other wind related organizations to identify and address gaps in technical information and tools needed for its program areas. Examples include: development and access to simplified spreadsheet tools for initial analyses of wind project economics and economic development impacts, development and distribution of state specific wind maps and small wind application guidebooks, and publication of a brochure that focuses on wind opportunities, case studies, and economics for rural electric coops. Visit our state pages or use the navigation to the left to access each of these resources.

Where is Wind Power?



State wind resource maps help to evaluate whether an area of interest should be further explored.

[Printable Version](#)

NEWS

Wind Capacity Growing as Americans Embrace All the Energy Source Has to Offer
December 17, 2007

Wind for Schools: Source of Education, Electricity, Revenue
December 6, 2007

Wind Powering America Update
November 16, 2007

Native American Wind Interest Group (NAWIG) Newsletter (PDF 408 KB)
Download Adobe Reader
August 31, 2007

Michigan Land Use Guidelines for Siting Wind Energy Systems
February 28, 2007

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EVENTS

Wind Interconnection Workshop
January 23, 2008

Harvesting Clean Energy 8
January 27, 2008

Role of Renewables in Consumer-Owned Utility Supply Portfolios Webinar
February 13, 2008

[More Events](#)

PUBLICATIONS

 Wind Powering America Update
November 16, 2007

 Native American Wind Interest Group (NAWIG) Newsletter (PDF 408 KB)
Download Adobe Reader
August 31, 2007

Association of Farm Broadcasting News Service for Wind Powering America at www.windpoweringamerica.gov/audio.asp. FY07 interviews featured John Stulp, Colorado Commissioner of Agriculture; and Larry Flowers, National Technical Director of Wind Powering America. Wind Powering America also links to wind energy videos at www.windpoweringamerica.gov/videos.asp

- Posted a coordinated wind events calendar at www.windpoweringamerica.gov/calendar.asp Reviewers and contributors include AWEA, NWCC, WAPA, UWIG, state Wind Working Groups, and more. The calendar boasts more than 65 wind-related events that can also be downloaded via an Excel file for importing into an online calendar
- Added a new section for siting wind turbines at www.windpoweringamerica.gov/siting.asp to support the increased deployment of wind energy. The page includes links to the

new Federal Wind Siting Information Center, siting considerations for New England, and links to the National Wind Coordinating Committee's information

- Continued to expand the New England Wind Forum sub-site at www.windpoweringamerica.gov/newengland.asp. Authored by contractors Robert Grace and Jason Gifford of Sustainable Energy Advantage LLC in Massachusetts, the sub-site, which consists of approximately 50 pages of wind energy content specific to New England, is a pilot for future regional sub-sites. More than 5,000 people subscribe to the New England Wind Forum Newsletter at www.windpoweringamerica.gov/ne_signup.asp

NREL lead: Julie Cardinal

NREL contractors: Julie Cardinal; Robert Grace and Jason Gifford of Sustainable Energy Advantage LLC

WINDPOWER 2007 Posters and Presentations

WPA team members presented six posters, papers, and presentations at the WINDPOWER 2007 Conference in Los Angeles, June 4 – 6. These publications can be found in the online NREL Publications database at www.nrel.gov/publications/.

Conference papers include:

Coastal and Marine Tall-Tower Data Analysis by M. Schwartz, D. Elliott, and G. Scott, NREL/CP-500-41858. This analysis emphasizes wind shear characteristics, similar to what was presented in the Central Plains tall-tower study, plus some information on the prevailing wind direction and diurnal and seasonal wind patterns.

Economic Development Impacts of Wind Power: A Comparative Analysis of Impacts within the Western Governors' Association States by S. Tegen, M. Milligan, and M. Goldberg, NREL/CP-500-41808. This paper uses NREL's newest Jobs and Economic Development Impacts (JEDI II) model to assess economic impacts from alternative power technologies, with a focus on wind energy, for a variety of states.

Poster topics include:

Economic Development Impacts of 20% Wind by M. Kelly and S. Tegen, NREL/PO-500-41608.

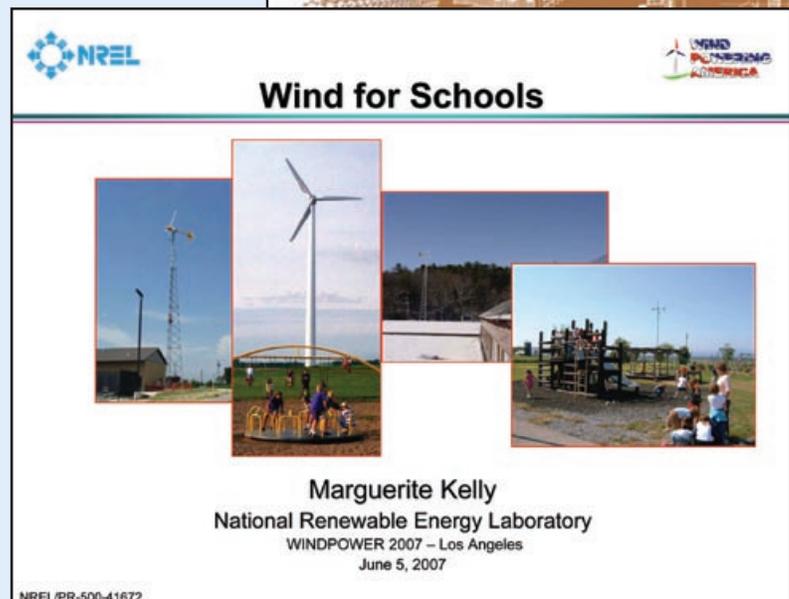
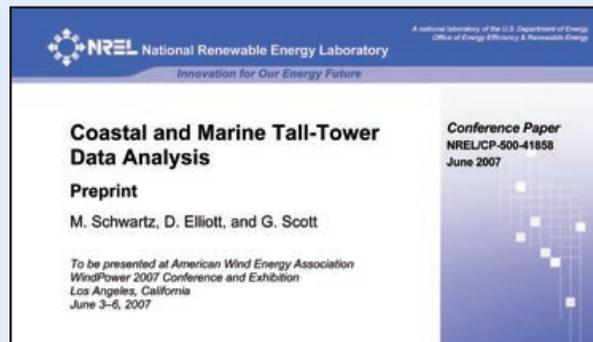
Wind Power on Native American Lands: Opportunities, Challenges, and Status by A. Jimenez, P.B. Johnson, R. Gough, R. Robichaud, L. Flowers, and R. Taylor, NREL/PO-500-41746.

Economic Development Impacts from Wind Power in the Western Governors' Association States by S. Tegen, M. Goldberg, and M. Milligan, NREL/PO-500-41040.

Presentations include:

Wind for Schools by M. Kelly, NREL/PR-500-41672.

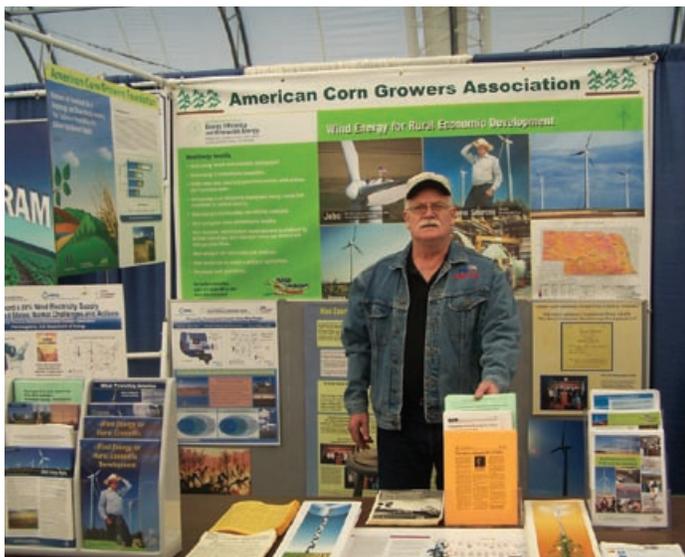
Wind-Water Nexus by L. Flowers.



Partnerships

American Corn Growers Foundation

The American Corn Growers Foundation (ACGF) continued its rural outreach and public education activities throughout FY07. ACGF had a wind energy information booth with outreach coordinator Dan McGuire planning and participating in a number of rural activities farm and trade shows including: Husker Harvest Days, the nation's largest working irrigated farm show; the Nebraska State Fair; and DAKOTAFEST, which is also attended by numerous Nebraskans. Other activities included McGuire making wind energy presentations or conducting workshops at the Nebraska Farmers Union state convention; the American Corn Growers Association (ACGA) national convention; a renewable energy conference at the University of Nebraska; a series of ACGA renewable energy workshops in Ohio, Illinois, South Dakota, and Kansas; a rural wind energy conference in Avon, South Dakota sponsored by a state senator; and various other outreach activities including radio advertising promoting wind energy and interviews with the press. Large quantities of WPA wind energy publications were disseminated.

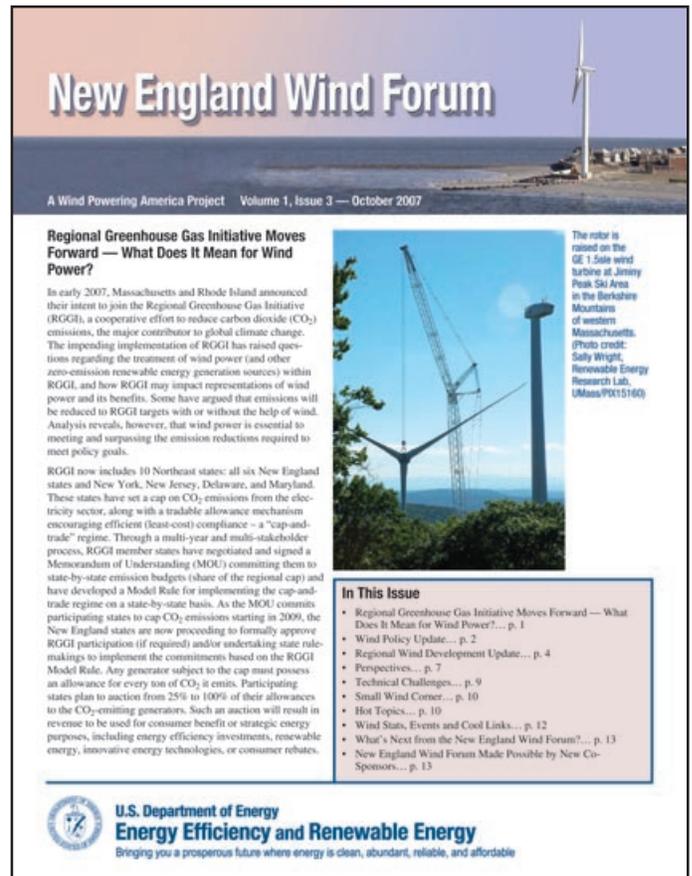


Dan McGuire

WPA contractor Dan McGuire promoted wind energy at the American Corn Growers Association exhibit during Husker Harvest Days in Grand Island, Nebraska, in 2007.

New England Wind Forum

In FY07, new co-sponsors committed to providing continuing support to the New England Wind Forum (Web site and newsletter): the New Hampshire Office of Energy and Planning, the Maine State Energy Program, the Connecticut Clean Energy Fund, and the Massachusetts Technology Collaborative's Renewable Energy Trust.



Learn about the New England Wind Forum at www.windpoweringamerica.gov/newengland.asp

The New England Wind Forum served its purpose of providing objective information on wind energy issues by assisting with several ongoing wind-related processes in New England, including the Maine Governor's Wind Power Task Force, the Rhode Island Offshore Wind Stakeholder process, and the New Hampshire Energy Policy Committee's wind energy subcommittee.

FY07 publications: Volume 1, Issue 2 of the *New England Wind Forum* newsletter (available as a PDF download from www.windpoweringamerica.gov/ne_signup.asp)

Technical Assistance Project

Since January 2004, NREL's Technical Assistance Project (TAP) has responded to 41 requests related to wind power in 24 states. WPA published a fact sheet outlining how NREL's Technical Assistance Project can help states and local governments reach their wind power goals. The publication is available as a PDF at www.nrel.gov/docs/fy07osti/41118.pdf.

Western Area Power Administration (WAPA)/ Public Power Partnerships

WPA's Public Power Partnership effort with the American Public Power Association (APPA) and the National Rural Electric Cooperative Association (NRECA) included a variety of technology deployment and technical assistance activities in FY07, including:

- Conducted 14 workshops, webinars, and presentations
- Completed 16 anemometer loans to public power utilities and cooperatives
- Exhibited the Wind Powering America booth at 10 national and regional utility conferences
- Distributed more than 5,000 copies of wind technology publications to more than 1,000 public power representatives
- Coordinated two field trips to wind farms for utility representatives
- Published 17 issues of Western Area Power Administration's Green Power and Market Research News
- Developed and implemented a new quarterly wind power newsletter to APPA and NRECA members to keep them informed of WPA Public Power Partnership activities

- Updated the Wind-in-a-Box CD Rom program
- Developed three new wind power case studies, bringing the total number of case studies to 12
- Awarded the 2006 Wind Cooperative of the Year Award to Associated Electric Cooperative in Missouri and the 2006 Public Power Wind Pioneer Award to the Town of Hull in Massachusetts
- Leveraged more than \$200,000 in funding from sources other than WPA to support the Public Power Partnership effort
- Provided wind-related technical assistance to public power utilities through APPA, NRECA, and Western's Power Line service.



A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.



www.windpoweringamerica.gov



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