



The MAREC Minute

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GRAND VALLEY STATE UNIVERSITY
MICHIGAN ALTERNATIVE AND RENEWABLE ENERGY CENTER

The Michigan Alternative & Renewable Energy Center (MAREC) is a program of Grand Valley State University. MAREC is part of the Muskegon Lakeshore SmartZone, a joint venture with the City of Muskegon, Grand Valley State University, and the Michigan Economic Development Corporation.



WindSentinel Advances Great Lakes Wind Research



It's been quite a journey for the AXYS WindSentinel™ buoy. Built in Vancouver and completed in September, it traveled by truck some 2,300 miles to the Muskegon lakeshore. It was dedicated October 7 near Lake Michigan, ready to aid the offshore wind assessment study to be conducted by Grand Valley State University, the University of Michigan, and Michigan State University.

The research buoy, one of only two in the world, is an 8.5 ton, 20-by-10 foot

boat-shaped hull capable of withstanding ocean conditions as it measures wind characteristics up to 120 meters above sea level using advanced laser sensor technology.

The deployment of the WindSentinel in the Great Lakes is the first application of this wind measurement technology anywhere in North America, said Arn Boezaart, MAREC director. "The research buoy represents an amazing new capacity

(Continued on page 4)

Upcoming Events at MAREC

Register at www.gvsu.edu/marec

January 12

Alternative Energy Finance | Webinar

Greg Truex, CPA, President, Michigan PACE

January 13 | Lakeshore Peer-In

January 21

Renewable Energy for Business/Home Owners

Part 1: Overview

Bruce Lowstuter, P.E., Pres., Clean Energy Systems

February 3

Advanced Photovoltaic Installer Training

February 9-10

NABCEP Photovoltaic Installer Certification Exam

Preparatory Class (date pending)

February 17

Regional Green Communities Workshop

February 18

Renewable Energy for Business/Home Owners

Part 2: Solar Thermal

February 24

STEM Energy Fair | GVSU Continuing Education,

School of Engineering, MAREC | Grand Rapids

March 9 | Lakeshore Peer-In

March 22-23 | Made in Michigan Renewable

Energy and Sustainable Technology Show

April 21

Renewable Energy for Business/Home Owners

Part 3: Photovoltaic & Wind

MOCAP and MAREC Showcase Solar Installations with Federal Renewable Energy Grant

On November 28, officials from Muskegon-Oceana Community Action Partnership, Inc. (MOCAP) held a community presentation to celebrate progress towards implementing the Sustainable Energy Resources for Consumers grant (SERC), awarded to the organization earlier this year. With technical assistance from MAREC, the MOCAP organization is using this grant from the U.S. Department of Energy to bring renewable energy technology to income-qualified home owners and qualified residential facilities.

The new installations provide long-term energy savings and bring the advantages of renewable energy technology to people who

(Continued on page 3)



The new 70kW photovoltaic solar energy system recently installed at Every Woman's Place in Muskegon.

Lakeshore Peer-In Promotes Entrepreneurial Collaboration

Forty area business people gathered on November 11 for the second meeting of Lakeshore Peer-In, an effort to promote the use of peer advisory groups to assist small business start-ups. Lakeshore Peer-In (LPI) is promoted by MAREC and others as a support element for successful entrepreneurial business development.

Organizers of Lakeshore Peer In presented the story of several entrepreneurs. Three of them recently formed a peer advisory group and shared the benefits they have experienced. The group includes Jeff Eikenberry, owner of Lakeshore Digital Signage; Leland Wyricki, film producer, actor and critic; and Don

VanderKooi, owner of Above the Line Studio and producer of corporate videos and commercials. They are now advising another entrepreneur, Becky Bennett of Solus Innovations, developer of a personal mobility solution for amputees that is already meeting real needs for customers like (see photo).

“By serving as a matchmaker, LPI hopes to help entrepreneurs build informal networks that can be a source of support as well as leads,” said Doug Huesdash, MAREC incubator manager and a Lakeshore Peer-In organizer. As an example, he said Bennett, a member of the Muskegon Inventors Network, is already in talks with one local manufacturer while another approached her at MAREC right after her talk.



Abby Woller, Solus customer, hugs inventor Becky Bennett. Sarah Woller, mother of Abby, says her daughter is thrilled with the independence the scooter provides and now regularly “rides bikes” with neighborhood children.

The next meeting of LPI is January 13; see details on www.gvsu.edu/marec or contact Doug Huesdash at huesdado@gvsu.edu.

Planting Seeds — Helping Lakeshore Business Achieve the Triple Bottom Line

More than 40 community, business and economic development leaders gathered at MAREC on November 16 to explore new strategies in community development along the lakeshore. The event brought together leaders from Grand Rapids and Muskegon to share new approaches to the challenges common to all West Michigan communities: maintaining social safety nets, fighting unemployment, and creating jobs in an era of limited public funding.

“While MAREC’s focus is on business and energy technology development with a renewable energy focus, we recognize the importance of economic development at all levels,” said Doug Huesdash, MAREC incubator manager. Huesdash organized the conference as member of an informal group in Muskegon looking at innovative projects where business models are applied to achieve community sustainability goals. “It’s the triple bottom line—knowing that environmental, economic and social needs all need to

be addressed and linked if we want communities that can participate in the technologies and business developments of the near future. In other words, our renewable energy businesses won’t succeed unless we also grow a strong workforce, develop a variety of supply chain jobs and achieve a thriving economy,” he added.

Event speakers (pictured at left) presented social enterprise models such as the national award winning Welfare to Career Program launched by Cascade Engineering, and Seeds of Promise, a nonprofit offspring of Cascade’s program that targets a high-unemployment neighborhood in Grand Rapids. Cascade and Seeds of Promise combine coaching and support networks for individuals, grass-roots problem-solving, business stakeholder involvement, and other methods that have resulted in high success rates compared to traditional welfare programs.

“Many existing programs do have a real impact,” said conference participant Sarah Rinsema-Sybenga, director of Community Encompass, a faith-based development organization for downtown Muskegon neighborhoods. “Among the challenges, however, is the disconnect between businesses and neighborhoods in some areas. We heard a local employer at the conference who had announced he had jobs available, but received no local applicants. Yet we

(Continued on page 3)



From left: speakers Doug Huesdash, MAREC; Ron Jimmerson, Seeds of Promise; Ken Steensma, Help Build Community; Norman Christopher, GVSU; and Dirck Lyon, Cascade Engineering.

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Federal Renewable Energy Grant

(Continued from page 1)

previously have not had the means or opportunity to benefit from renewable energy technology.

At the event held at MAREC, MOCAP CEO Kenneth R. Shelton Sr. and staff updated those present on the work underway with the \$3.2 million in federal SERC funding it is receiving, which is also coordinated through Michigan's Department of Human Services.

The grant is employing a number of Michigan contractors as they install various forms of renewable energy technology. SERC funds are being used to install solar photovoltaic (PV), hybrid hot water heaters, solar hot water, and solar hot air systems on both single-family and multi-residential structures in Muskegon and Oceana Counties.

The project will benefit four large housing units with a combined residential population of about 150 people, along with 50 individual residential homes. The selected multi-family units and homes are income qualified by federal standards and were determined energy efficient or first

Triple Bottom Line

(Continued from page 2)

know there are unemployed citizens within walking distance of the company. That's a communication gap that needs to be addressed."



"There appears to be interest among the attendees to meet again to discuss implementation of the ideas raised in our lakeshore communities," said Huesdash. For more information, contact Doug Huesdash at huesdado@gvsu.edu.

Multi-family Units Assisted by Renewable Energy Grant

- Every Woman's Place
- Muskegon Rescue Mission
 - ◊ MRM Men's Shelter
 - ◊ MRM Women's Shelter
- West Michigan Therapy (WMT) Transitional Living Center (TLC)

received weatherization upgrades to assure energy efficiency before the more advanced renewable energy systems are installed. The four large multi-family projects are underway or nearly complete and one-third of the residential projects are underway. The SERC projects will be completed by March 31.

"All the money saved by the installations in utility costs will go directly back into

the community," said Kim Walton, MAREC program coordinator and liaison to the SERC project.

As the contracted technical advisor for the project, Walton played a key role, assisting with proposal review and full implementation. "MOCAP is a weatherization organization; they have extensive knowledge and experience in creating energy efficiency and energy savings," said Walton. "However, the technology of renewable energy systems was new to MOCAP, and this is where we could assist them in applying the most effective technologies and practices to achieve the best results."

INCUBATOR PROFILE: Energy Partners, LLC



Energy Partners LLC is a second-year incubator client at MAREC. Established by Jim Wolter, GVSU Professor Emeritus, it is a "virtual" corporation offering design services from nearly 10 world-class renewable energy development companies. Their goal? Providing the expertise—without the overhead and lead time—that clients need to develop their own lines of "clean tech" products.

The partners offer capabilities in solar, wind and energy storage systems, power management, and smart grid controls. "We can offer large and small corporations a path of least resistance and a lowest-cost approach for expanding into clean tech," Wolter says.

The company team manages relationship-building among suppliers and clients, needs assessment, specification writing for design, creation of intellectual property, and development program management for clients. His partners can prepare designs, build demonstration models, or prepare fully documented and functional prototypes ready for mass production. "We can do this in one-third the time it would take a larger corporation," adds Wolter, a former GE engineer.

The company has filed four patents for "new and fundamental 'green' technologies that I see as breakthrough products; we can license these to clients so they can get into new products faster," says Wolter. The firm's client base includes the US armed forces and other federal agencies, along with aerospace, energy and information-based firms. Clients include Briggs & Stratton, Patriot Solar, JCI Battery, and S & C Electric.

The MAREC venue works for Wolter. "The university linkage with GVSU, the impressive facility, access to other incubator clients, it helps me sell both the sizzle *and* the steak."



Congratulations to Silvia Diedrich, MAREC assistant, who was recently recognized for 10 years of service to Grand Valley State University. Silvia began at MAREC in 2006 after working for Continuing Education at GVSU's Holland Campus. Thanks, Silvia!

From The Director

As we move into the holiday season, we at MAREC have much for which to be grateful. Great support from GVSU, our fabulous "parent" organization, wonderful local and regional collaborators involved in numerous MAREC projects, student employees who enrich our MAREC environment and make our jobs easier, and words of encouragement from people throughout the state and Midwest region who support and validate our efforts. Thank you all!

Diversity of effort and celebrating successes large and small are themes that come to mind as staff prepares the current newsletter. The launch of the Lake Michigan wind research buoy has certainly been a high profile event – it's hard to maintain a low profile with an eight ton banana colored buoy that resembles an oddly-shaped submarine!

The deployment of the WindSentinel buoy in Lake Michigan on November 4 was a landmark event for wind research on the Great Lakes and the culmination of the first phase of the offshore wind assessment project. Hurdles remain and important milestones lie ahead, but moving from a concept on paper to seeing a working research platform "on-station" in Lake Michigan brings a degree of satisfaction.

Equally significant, on November 28, MAREC hosted a celebration event to recognize progress being made in bringing renewable energy technology to income-qualified homes and group care facilities. Working in partnership with



Arn Boezaart speaks during dedication of the research buoy, joined by Chris Hart, US Dept. of Energy; Thomas J. Haas, GVSU President; and Guy Meadows, U of M College of Engineering.

the Muskegon-Oceana Community Action Partnership, Inc. (see page 2), MAREC staff are providing technical assistance in bringing renewable energy technology to people in our communities previously unable to access and afford state-of-the-art energy innovation. This project is significant in many ways.

Business development, incubation and acceleration are cornerstone activities at MAREC. As this issue of the MAREC Minute is released, we are pleased to announce the arrival of Advanced Energy Management as a new business accelerator tenant (see box). Recent entrepreneurial development events noted elsewhere in this newsletter round out the diversity of effort and high level of activity at MAREC.

Stay in touch, and watch our future progress. May the New Year bring all you wish for, and peace to all.

Arn Boezaart, Director



MAREC's annual advisory board meeting was held in September, 2011. In late November, MAREC finalized an agreement with Advanced Energy Management of Montague (www.goaem.com) to become a new on-site business accelerator tenant.

Wind research buoy on station *(Continued from page 1)*

for wind research in the Great Lakes," he said. "It includes the most advanced wind measurement technology available. It will likely draw interest internationally from wind researchers and developers."

Since its dedication, the buoy has been tested in Muskegon Lake to calibrate its LIDAR wind measurement system with data from the nearby GVSU meteorological tower. Suresh Mani, MAREC's associate director for research and technology, worked with GVSU engineering faculty and others to ensure that data acquisition, transmission and processing were working.

On November 4, the buoy was moved four miles offshore for further data validation in the open lake where the buoy's technology must compensate for often high wave action. Data will be sent to GVSU's engineering school before sharing it publicly.

The WindSentinel was built by AXYS Technologies of British Columbia, and is equipped with a Vindicator laser wind sensor by Catch the Wind Inc. of Virginia. Funding partners include the U.S. Department of Energy, Michigan Public Service Commission, We Energies, U-M and Sierra Club.

The buoy on station four miles offshore from Muskegon, transmitting data.

