What's Happening @ EERE

Amped Up!

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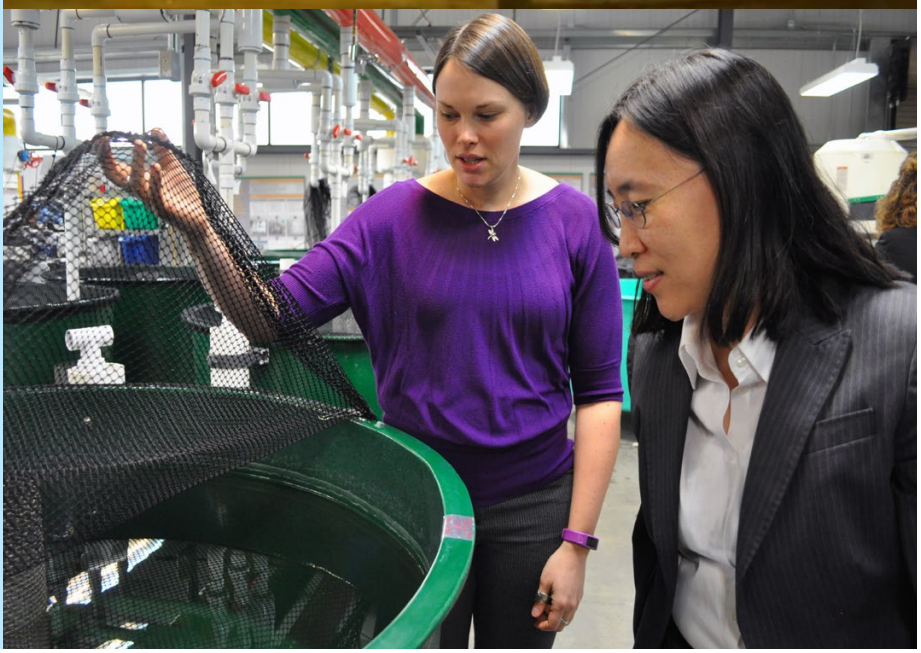
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Crosscutting Initiatives: Lab Impact & CEMI



IN THIS ISSUE

A Message from Dave

Dear EERE Family,

I recently returned to my alma mater, the Massachusetts Institute of Technology (MIT), to speak to the 10th Anniversary Conference of the MIT Energy Club, which I founded with Libby Wayman and other students eager to learn about exciting new opportunities in clean energy. It was great being back in that environment and seeing the enthusiasm and innovation from the next generation of clean energy leaders. This club we started with just a few passionate people has now grown to about 5,000 members, many of whom have gone on to create innovative technologies and start-ups (and many of whom are now part of the DOE family!).

When we started the club, we quickly realized that we needed to include not just science and engineering students, but also MBA students and others from different disciplines if we were going to advance our ideas from the laboratory to the market. I still view the energy space through that lens: we need to strongly consider the full innovation process and the end customer if we're going to ensure that our R&D becomes a commercial reality.

That is why two years ago I launched—and asked Libby to lead—the Clean Energy Manufacturing Initiative (CEMI), an initiative that focuses on creating American leadership in clean energy manufacturing and increasing the energy productivity of U.S. manufacturers across the board. Today, CEMI serves as a DOE-wide initiative for driving our technology programs' manufacturing activities and engaging federal agencies, research institutions, and the private sector. In addition to CEMI's other successes, we've successfully launched a number of world-class clean energy manufacturing hubs, with the most recent being the Institute for Advanced Composites Manufacturing Innovation housed at Oak Ridge National Laboratory. Libby will be leaving DOE at the end of April, and I want to personally thank her for all of her efforts with CEMI. We will miss her greatly.

EERE's National Lab Impact Initiative is another way we are advancing the full innovation process. Launched in 2013, Lab Impact's goal is to ensure that our national lab activities embody an entrepreneurial spirit and have maximum commercial impact. As part of Lab Impact, we are launching several new activities which ensure that our labs have a better understanding of critical industry needs, that lab capabilities are fully accessible to small and large companies, and that lab personnel have the tools they need to identify opportunities to commercialize technologies. I'm also pleased to announce that as part of Lab Impact, our EERE National Laboratory Guiding Principles have been finalized and now clearly define our partnership with the national labs.

I'm thrilled this issue of *Amped Up!* highlights the truly exciting work that is going on within CEMI and the Lab Impact Initiative. And while I believe that both these initiatives can be real game changers, they are only possible because of the people behind the innovations, programs, and partnerships. I am reminded every day that EERE's impact is only as good as our people, who are among the best and brightest in the world. Your work is creating new opportunities for students like those I recently met at MIT, and I know you match their level of enthusiasm and sense of innovation as we all help shape the future of clean energy.

Thank you for all of your hard work and efforts.

Dave

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Lab Impact: Bringing Innovation to Market

Announced by Assistant Secretary Danielson at the National Renewable Energy Laboratory in July 2014, the National Laboratory Impact Initiative (Lab Impact) is designed to help translate research results into practical products that make it to market, give taxpayers a healthy return on their investments in research, and create good-paying, middle-class jobs through science, technology, and innovation.

Representing a tremendous resource for clean energy innovation, the national labs are responsible for a majority of the accomplishments that EERE celebrates today. However, in order to fulfill its mission to create and sustain U.S. leadership in the transformation to a global clean energy economy, EERE needs new approaches to ensure that lab innovations translate to commercial successes more quickly and efficiently than ever before.

Lab Impact includes three pilot programs, specific targets for program-directed tech-to-market activities, and new policies that define the operating relationship between EERE and the national labs. Together, these components are meant to provide a firm foundation for EERE's work with the national labs that will become part of our joint culture and operations—translating world-class science and engineering into real-world impacts.

Joyce Yang, Lab Impact Director who took over from Jetta Wong in March, has a clear vision for the initiative's future. "Lab Impact is about leveraging the investments that we have already made within the national labs to help the United States win the clean energy race," said Yang. "This will require new programs and adding targeted technology to market activities within our lab R&D portfolio, such as Lab Industry days. Lab Impact is, at its core, as much about adding to the ways our labs engage with industry as it is celebrating and clearly communicating the successful market outcomes that labs and industry partners have already achieved together."

Assistant Secretary David Danielson speaks on the National Lab Impact Initiative to federal employees at Pacific Northwest National Laboratory (PNNL) on March 6, 2015. Continuing his lab tours from 2014, Dr. Danielson will visit three more national labs this spring. (Photo courtesy of PNNL)

As part of the initiative, Dr. Danielson has visited eight DOE labs over the last nine months to explain activities under Lab Impact, hear about lab commercialization successes, and get valuable feedback on where EERE and the labs can take their partnership to the next level. Dr. Danielson will visit more labs throughout 2015 to continue to refine specific elements, as well as to ensure that Lab Impact principles are ingrained within EERE and across the lab complex.

The Lab Principles document, three pilots, and tech-to-market efforts are integral to the initiative's success, and these elements will help build important relationships within EERE, the labs, and industry to advance our clean energy future.

LAB PRINCIPLES DOCUMENT

The national laboratories operate under a special designation as Federally Funded Research and Development Centers, which allow for a unique long-term relationship in pursuit of EERE technical and program objectives.

Led by Deputy Assistant Secretary of Operations Steve Chalk and working with representatives from across the labs, EERE developed a Lab Principles document (officially released in March 2015) that better defines EERE's relationship with the labs, as well as the operating procedures and necessary interactions to maximize industry and market impact.

The document provides a clear and consistent framework between EERE and the national labs to support long-term stewardship of science and technology for a clean energy future.

LAB-CORPS

In an effort to help DOE's national labs accelerate the transfer of innovative clean energy technologies into the commercial marketplace, EERE launched Lab-Corps in November

Assistant Secretary Danielson tours Pacific Northwest National Laboratory to promote Lab Impact. Continuing his lab tours from 2014, Dr. Danielson will visit three more national labs this spring. (Photo courtesy of EERE)

2014 as a $2.3 million pilot. Modeled after the National Science Foundation's I-Corps program, Lab-Corps will enable lab-based teams to gain direct market feedback on their technologies and pursue the development of startup companies, industry partnerships, licensing agreements, and other business opportunities.

Six national labs have been selected to participate in the Lab-Corps pilot. Over the next year, these labs will assemble, train, and support entrepreneurial teams to identify private-sector opportunities for commercializing promising sustainable transportation, renewable power, and energy efficiency lab technologies. Each Lab-Corps team will receive comprehensive training and access to a suite of commercialization resources, including technology validation and testing, facility access, techno-economic analysis, and other incubation services.

SMALL BUSINESS VOUCHERS

Small businesses are the leaders in many areas of clean energy innovation and can greatly benefit from national lab resources. Developed based on similar state and international programs, the Small Business Voucher (SBV) pilot intends to increase small business access to the expertise, competencies, and infrastructure of DOE's national laboratories—providing $20 million in voucher funding—as well as to change the way national labs engage with clean energy technology businesses and entrepreneurs.

Under SBV, EERE will select up to five national labs to participate in the pilot. By late summer, the selected labs will begin working on cutting-edge research with small businesses from across the country to bring the next generation of EERE technologies to market. EERE technology offices will award and manage these activities to ensure that they align with long-term technology office goals and multi-year program plans.

TECHNOLOGIST-IN-RESIDENCE

In a partnership with the Clean Energy Manufacturing Initiative, the Technologist-in-Residence (TIR) pilot intends to develop and strengthen strategic relationships between the labs and established private-sector companies, recognizing the unique role that these relationships can play in developing and commercializing clean energy technologies.

STAFFING UPDATE

After a year as Lab Impact Director, Jetta Wong has taken on a new role as Acting Director of the Office of Technology Transitions (OTT), which will expand the commercial impact of the Energy Department's research.

OTT coordinates technology transfer activities from DOE's 17 national laboratories, research and production facilities, and universities to actively support private-sector commercialization activities. Jetta will be working closely with EERE offices and initiatives to commercialize EERE technologies and strengthen the global competitiveness of U.S. industries in the clean energy sector.

Jetta was integral in getting Lab Impact up and running; she helped organize the lab tours, launch the pilots, establish a plan moving forward for the initiative, and more in Lab Impact's inaugural year. We at EERE wish her the best of luck and look forward to working with her in her new role.

Joyce Yang, formerly with the Bioenergy Technologies Office, has taken over for Jetta as Lab Impact Director.

TIR aims to facilitate communication and partnerships between the labs and corporations by connecting private industry with national lab innovation resources and infrastructure, as well as increasing the national labs' understanding of specific corporate priorities and research needs.

TIR will enable a unique platform exchange that embeds industry research personnel within a specific lab to learn about its capabilities, and it will simultaneously allow lab research personnel to work directly with a single corporation to understand processes and pathways for technology commercialization.

Developing these long-term relationships will allow both sides to go beyond a single project, building long-term strategic value and potentially resulting in significant, high-impact, collaborative research and development.

DOE issued a lab-call for TIR the last week of April and expects to make final selections in the summer. The pilot partnership work should begin later this year.

TECHNOLOGY OFFICE TECH-TO-MARKET PLANS

To encourage and maximize the transfer of EERE-funded technologies into the marketplace, Assistant Secretary Danielson has set targets for all programs to place 1% of their lab-related technical expenditures for new tech-to-market activities.

These activities can include industry days, investor forums, market research, and other activities that enable the labs to identify and respond to the needs of the U.S. clean energy sector.

While many of the technology offices are already engaging in various commercialization and tech-to-market efforts, this new funding target will ensure a broad and consistent approach to making sure lab-funded activities achieve maximum commercial impact.

One great example of success in this arena is Cyclotron Road, a technology incubator created by a former Director of the Advanced Research Projects Agency-Energy, Dr. Ilan Gur, in partnership with Lawrence Berkeley National Laboratory (LBNL). The program is designed as an innovation pipeline for energy technologies and provides $500,000 in salary and seed funding over two years at LBNL, access to the lab's world-class R&D, as well as the support needed to ensure commercial success.

2015 AND BEYOND

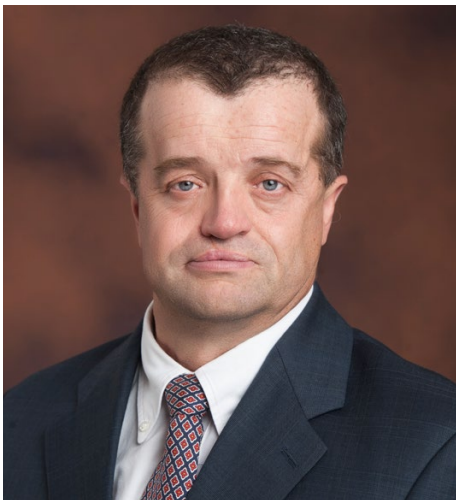
EERE will continue to roll out and implement Lab Impact pilots, and the lessons learned from these efforts will drive broader expansions across EERE and our labs in coming years.

EERE technology office leadership will work to incorporate and integrate the Lab Guiding Principles into processes and interactions and will look for new ways to leverage their laboratory investments to accelerate their missions.

This is an exciting time within EERE, and Lab Impact helps set the foundation for us to ensure that the national labs maximize on opportunities to engage with industry, commercialize technologies, and bring our nation closer to winning the global clean energy race.

Assistant Secretary Danielson learned about PNNL's work to make dams safer for fish around the world during a lab visit on March 6, 2015. (Image courtesy of PNNL)

Chalk Talk: Staffing, Priorities, and National Labs with DAS for Operations Steve Chalk



Steve Chalk, EERE's Deputy Assistant Secretary of Operations and Strategic Innovation. (Photo courtesy of DOE.)

Just over four months into his new position as Deputy Assistant Secretary (DAS) for Operations, Steve Chalk has been a busy man lately. DAS Chalk's goal is to provide the best support possible to EERE so we can carry out our main mission to create and sustain American leadership in the global transition to a clean energy economy. EERE's Amped Up staff sat down with DAS Chalk in March to get his take on how things are going.

What is your key priority as the DAS for Operations?

Chalk: We are understaffed, so our number one priority is to retain our current highly knowledgeable and dedicated staff and recruit top talent for EERE. We have significant hiring needs, and we have critical skills to fill. The top priority is to get all of our hiring needs met over the next six months. To help with the staffing issue, our Workforce Management Office staff that includes Aronda Ford, Nicole McGowan, Robyn Hebron, Imani Lewis, Michael York, Believe Aklaku and Bill Babiuch are working very closely with DOE Human Capital on a surge hiring plan that includes approximately 140 merit promotions and new positions.

We are also working to establish stable senior leadership in operations. Fredy Alberto recently joined us as the Deputy Director of Budget, and just two weeks ago, we welcomed Karen Ray as our new Budget Director. Michael Budney will soon come aboard as our new Director for the Office of Business Operations (OBO), overseeing our offices for workforce management, project management and information technology.

Offices can reach out to Jennifer Blankenheim, Acting Director of OBO, with any questions on hiring priorities and policies.

Are you going to look to hire or promote internally first, or are you going to bring people in to fill vacant positions?

Chalk: We always consider internal candidates first, even on externally advertised jobs. If we advertise externally and select an internal candidate, then this internal candidate's supervisor will be automatically allowed to backfill the vacancy created by the internal promotion. We are holding weekly meetings with all EERE offices to prioritize all vacancies and to address challenges in the recruitment and selection processes.

What are your other priorities?

Chalk: There's a renewed effort on IT systems integration. Don Stuart, Steve Von Vital and Bindu Jacob are leading this critical effort to provide an integrated system, supporting EERE's new and still-improving business processes. Our goal is to have one system that integrates budget execution, project management, funding opportunity announcement (FOA) work, and our lab work. We will be asking the programs for their input; it is critical for us to learn what requirements the programs will need for the system to move forward. In the next three months, we want to really lock in the overall customer requirements, the schedule, and the cost of that system.

Another priority we are working on relates to project management and setting the right policies for how we interact more strategically with our national labs. In March, Secretary Moniz approved our EERE National Lab Guiding Principles. This policy document defines how we will partner with the national labs in a consistent, strategic way to sustain world-class science and technology capabilities and foster greater innovation, entrepreneurship, and market impact.

In addition, Dr. Danielson issued our FY 2016 Annual Operating Plan policies, which should be used by all staff in establishing projects with their National Laboratory counterparts. I appreciate all of the efforts by Priscilla Bumbaca, Kara Peralta, Ted Donat, Leslie Pezzullo and others behind the scenes under Scott Hine's leadership in

the Project Management Coordination Office, who continue working on our lab policy guidance.

We are also undergoing a lot of changes related to FOAs, and we hope to streamline that announcement process.

Further, we have a lot of work to do in closing out our Recovery Act projects. All remaining Recovery Act funding must be de-obligated by September 30, 2015. Staff at the Golden Field Office and National Energy Technology Laboratory, in partnership with our HQ program staff, are focused on this important activity to responsibly close out the highly successful Recovery Act projects.

WMO is focusing on initiatives to strengthen employee engagement, and institute more career development options for people who want to broaden their experience or gain deeper expertise.

Finally, we'd like to focus on how to communicate better with EERE staff to enhance two-way communication. For instance, we are considering a biweekly webinar with a Q&A session to gauge what's on people's minds and answer questions.

Your office was responsible for the National Lab Guiding Principles. How do they fit with Lab Impact?

Chalk: The Principles fit squarely in the Lab Impact Initiative, as they both focus on achieving world-class science and technology solutions to our national climate and energy challenges. If we can sustain and even strengthen these science and technology capabilities at the labs, then we will have industry knocking on our door—so to speak—to partner with the labs, and in turn, we will increase our impact on the clean energy market.

CEMI: Building a Strong Foundation through Industry Engagement

Fulfilling EERE's mission to create and sustain U.S. leadership in the transformation to a global clean energy economy will need to include a robust and efficient U.S. manufacturing sector. In 2013, Assistant Secretary Danielson established the Clean Energy Manufacturing Initiative (CEMI) to address this need by increasing U.S. competitiveness in the production of clean energy technologies, and increasing U.S. manufacturing energy productivity across the board.

Since its launch, CEMI has been elevated to a DOE-wide initiative and is an effort across the Department to create and implement efforts within individual offices or collaboratively across offices to achieve its objectives and advance progress toward the nation's all-of the-above energy goals.

Dedicated staff support CEMI and work across DOE and within EERE to ensure that manufacturing is a part of our entire program.

Some high-impact examples of activities led by individual offices within EERE include SunShot's SolarMat and SUNPATH advanced manufacturing programs, the Advanced Manufacturing Office's (AMO's) Clean Energy Manufacturing Innovation Institutes in the President's National Network for Manufacturing Innovation, and the Weatherization and Intergovernmental Programs Office's clean energy economic development roadmapping projects with states.

In order to continue this success, DOE leaders engage extensively with industry as a key part of this Initiative. One example of this is the American Energy and Manufacturing Competitiveness Partnership with the Council on Competitiveness, which brings together thought leaders from industry, academia, national laboratories, and labor for dialogues and annual national summits.

In addition, a series of regional summits showcase DOE's leaders and resources in clean energy manufacturing and encourage additional input. DOE and EERE leaders also host "CEMI Days," where innovative and leading clean energy technology manufacturers come to DOE to talk about their issues in competitiveness and learn more about DOE resources.

The lessons learned from these partnerships have identified many

AMO Director Mark Johnson (far right) discusses the qualities of the 3D-printed Shelby with Energy Secretary Moniz and Assistant Secretary Danielson. (Photo courtesy of DOE)

NREL'S PV array at the National Wind Technology Center near Boulder, Colorado, is an opportunity to study how ecosystems respond to renewable energy development and establish best management practices that re-established habitat, minimize weed invasion, prevent erosion and protect wildlife. (Photo courtesy of the National Renewable Energy Laboratory)

challenges and opportunities for DOE to address as a part of CEMI either within individual offices, or that can be better addressed collaboratively between offices. One example of an opportunity for DOE to engage across offices is connecting manufacturers with national laboratories.

To address this need, the CEMI Team, AMO, and Tech-to-Market, have developed the Technologist-in-Residence pilot that will connect manufacturers with all of DOE's national laboratories and engage DOE's leadership in streamlining ways for companies to form meaningful relationships with labs that can result in significant collaborative R&D.

Another example of an opportunity that can be better addressed collaboratively to enhance U.S. manufacturing and work toward DOE's energy goals is Advanced Materials Manufacturing, or the Materials Genome Initiative for process development. Advanced Materials Manufacturing is a new approach to materials process development that is being piloted by some offices within EERE (e.g., the Vehicle Technologies Office) that can use simulation and high-throughput experimentation to drive the development of new processes and create computational tools that allow the broader research community to develop new materials processes in less time and for lower costs. Recognizing this opportunity, the Tech Team proposed an Advanced Materials Manufacturing effort as a major element of the DOE FY 2016 budget proposal.

Industry engagements also emphasized the challenges in scaling innovative clean technologies to manufacturing. The CEMI team has been hard at work to further study these challenges—working with EERE programs and across DOE—to identify pathways to address market failure.

As a part of CEMI, DOE leaders will continue to engage thought leaders in manufacturing and to showcase the great work done across DOE to enhance U.S. manufacturing while advancing progress of our nation's all-of-the-above energy goals.

Events coming up include a regional summit to take place in the Southeast this summer, additional dialogues with the Council on Competitiveness, and a national summit in September.

U.S. MANUFACTURING POLICY

CEMI is part of President Obama's plan to revitalize American manufacturing. In 2011, the President's Council of Advisors on Science and Technology, which included Secretary Moniz, issued the "Report to the President on Ensuring Amercian Leadership in Advanced Manufacturing."

Then, in 2012, the President's Advanced Manufacturing Partnership Steering Committee delivered the report "Capturing Domestic Competitive Advantage in Advanced Manufacturing" to the president, providing him with a list of recommended actions for transforming the U.S. manufacturing industry.

These reports made recommendations in three key areas: (1) enabling innovation, (2) securing the talent pipeline, and (3) improving the business climate. These areas are the foundation of President Obama's plan, and a number of new executive actions, initiatives, and investments are being proposed and/or implemented as a result.

These range from the development of manufacturing innovation institutes across the country, to the creation of community college career fund to develop a skilled manufacturing workforce, to tax reforms that encourage companies to bring jobs and investment to the United States.

An Up-Close Look at CEMI with Libby Wayman

In March, EERE's Amped Up staff sat down with CEMI Director Libby Wayman to discuss CEMI and some of its key activities.

What is CEMI, and how does it operate?

Libby: CEMI represents everything we do as a department in clean energy manufacturing. While it was started by EERE, it has grown to be an effort across all of DOE that is focused on enhancing manufacturing and advancing progress toward U.S. energy goals. CEMI is not an office. It does not have a dedicated budget; it is a collection of activities across the Department.

CEMI is managed through a Tech Team, which was set up by Secretary Moniz and is made up of representatives from across DOE. Currently, I co-chair the steering committee with AMO Director Mark Johnson. In the future, we anticipate that the chairs will rotate to other offices. EERE also provides some dedicated staff members to support the initiative.

The Tech Team is actively engaging across DOE to create and accelerate integrated innovation efforts, including collaboration development efforts in advanced manufacturing for a number of energy technologies; coordination of efforts to catalyze advanced manufacturing technologies developed by AMO across different energy sectors; and strategic development and coordination efforts to continue to identify high-impact opportunities to advance energy goals and U.S. clean energy manufacturing competitiveness.

The 2016 CEMI budget we've prepared includes specific proposals for (1) the creation of a Materials Genome Initiative for Clean Energy—focusing on Advanced Materials Manufacturing—that could potentially unlock a new range of materials to address critical energy requirements and create computational tools to allow the broader research community to reduce the time and expense of developing breakthrough materials processes; and (2) the application of Additive Manufacturing for Clean Energy, a new area that has the potential to fabricate critical components that would not be possible using conventional means.

How does CEMI work with the EERE technology programs?

Libby: EERE technology program offices work together in the CEMI Collaboration Team to create strategies for enhancing U.S. manufacturing and meeting our energy goals. These strategies are then carried out within the technology programs or as collaborative efforts across offices. Activities like the Wind and Water Program's distributed manufacturing for tall towers and 3D printing for marine and hydrokinetic components, SunShot's SolarMat and SUNPATH advanced manufacturing programs, and Weatherization's regional clean energy manufacturing road mapping efforts are all being carried by individual programs, and are key components of CEMI.

With its advanced manufacturing focus, AMO is carrying out a number of key activities, including technical assistance for manufacturers to take up the resident manufacturing technologies both to advance clean energy products and to save energy in manufacturing. AMO also has launched and grown a number of high-impact clean energy manufacturing R&D consortia, including the Oak Ridge National Lab Manufacturing Demonstration Facility, which was crucial in the making of the 3D-printed car and 50th Anniversary Shelby Cobra, the Critical Materials Institute led by Ames Laboratory, and two new Manufacturing Innovation Institutes in the President's National Network for Manufacturing Innovation. PowerAmerica is led by North Carolina State University and focuses on next generation wide bandgap power electronics, and the Institute for Advanced Composites Manufacturing Innovation is led by University of Tennessee-Knoxville and focuses on next-generation lightweight composite materials and manufacturing.

Elizabeth "Libby" Wayman, CEMI Director. (Photo courtesy of DOE)

STAFFING UPDATE

After two and a half years of service to EERE and DOE, Libby Wayman will be leaving DOE at the end of April. While EERE looks to find a replacement, DAS for Transportation Reuben Sarkar will assume the role of Executive Director of CEMI and join AMO Director Mark Johnson as a Co-Chair of the Secretarial Tech Team for Clean Energy Manufacturing.

DAS Sarkar will also lead the Clean Energy Manufacturing Tech Team's budget proposal. We wish Libby the best of luck in her future efforts and thank her for her dedication to launching CEMI and advancing EERE's mission!

What are the 2015 priorities within CEMI?

Libby: EERE has several priorities within CEMI—establishing additional National Network for Manufacturing Innovation Institutes and setting up the network between them; issuing additional SolarMat awards; and getting several collaborative efforts going, including EERE offices' global clean energy manufacturing analysis, the Technologist-in-Residence pilot, and scaling innovation to manufacturing. The dedicated CEMI staff will also support DOE's FY 2016 and FY 2017 budget proposals, and hold several events to showcase DOE's efforts and leaders in clean energy manufacturing and to hear from industry about their priorities.

FY 2016 Budget Request for DOE

In February, Energy Secretary Moniz detailed President Obama's $30 billion Fiscal Year (FY) 2016 Budget Request for DOE—emphasizing the Administration's commitment to America's clean energy future.

EERE's robust $2.7 billion request calls for an increase across its sectors and demonstrates a continued focus on growing the domestic clean energy industry, increasing private-public energy productivity for U.S. businesses, and expanding access to renewable power and alternative vehicles.

To view the EERE-specific FY 2016 budget documents, visit EERE's FY 2016 Budget Web page.

Secretary Moniz speaks to Congress about DOE's FY 2016 Budget Request. (Photo courtesy of DOE)

Cleantech University Prize

Building on the success of the National Clean Energy Business Plan Competition, DOE announced $2.5 million in available funding for the Cleantech University Prize (UP) to inspire the next generation of clean energy entrepreneurs. Cleantech UP will promote collegiate high-tech entrepreneurship—accelerating the rate of clean energy innovation in the United States. It will establish a national Cleantech UP Hub, supporting up to eight Cleantech UP Collegiate Competitions. Launched in 2011, the National Clean Energy Business Plan Competition has attracted more than 750 teams, which has resulted in more than 70 ventures and generated $38 million in follow-on funding. (Photo by Ken Shipp, DOE)

2016 Collegiate Wind Competition

On February 18, DOE selected 12 teams to participate in the biannual Collegiate Wind Competition, which challenges teams of undergraduate students to design and build a model wind turbine based on market research, to develop a business plan, and to test their turbines against a set of performance criteria. The 2016 Collegiate Wind Competition will take place at the American Wind Energy Association WINDPOWER Conference and Exhibition in New Orleans, Louisiana, from May 23–26, 2016. The competition combines academic coursework with hands-on learning; encourages collaboration by integrating students from a variety of academic fields, including engineering, business, communications, and social science; and challenges them to develop state-of-the-art wind energy solutions as a team. (Photo courtesy of DOE)

Amped Up Follow-up

3D PRINTING

EERE's Advanced Manufacturing Office and Oak Ridge National Laboratory revealed a 3D-printed Shelby Cobra in January 2015, displaying the potential of additive manufacturing since the development of the first 3D-printed car in 2014. The Shelby was printed at DOE's Manufacturing Demonstration Facility using advanced composites, cutting its weight in half while improving performance and safety.

Demonstrating a number of cutting-edge technologies, the Shelby shows how the National Network for Manufacturing Innovation Institutes could utilize each other's strengths to achieve more together than they could on their own. With these improvements , manufacturers will be able to reinvent products that are at the foundation of a clean energy economy.

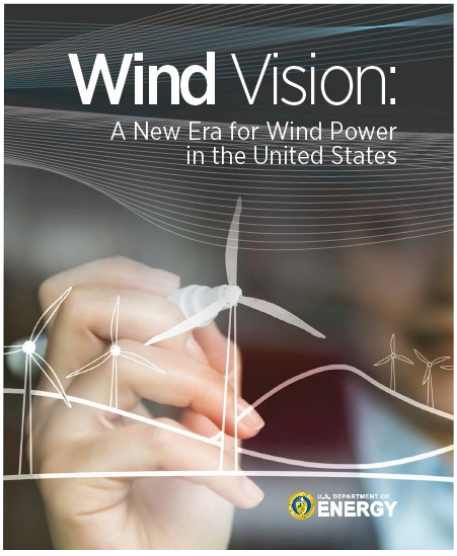
NIICE AWARDS

In the 15 months since pledging support to the National Incubator Initiative for Clean Energy (NIICE), the start-up community has grown, and technology is developing faster through initiative-driven competitions. NIICE Partner NextEnergy is running an LED and vehicle challenge with corporate partners like Ford and SAE International. The Clean Energy Trust, another NIICE Partner, has established the Clean Energy Challenge through partnerships with major customers like Schneider Electric and Exelon.

In addition, the Electric Power Research Institute and the National Renewable Energy Laboratory, NIICE administrators, have officially launched the Clean Energy Incubators Network, a new national organization to support clean energy entrepreneurs and incubators around the country. Lastly, the Los Angeles Cleantech Incubator has established its second satellite incubator project at Prospect Silicon Valley in San Jose, California.

WIND VISION REPORT

In March, the Wind Program released its much-anticipated *Wind Vision Report*, which it has been building with an elite team of industry experts over the past two years. The *Wind Vision Report* revisits the findings of the 2008 report, *20% Wind by 2030*, and builds upon advancements in wind energy systems in order to quantify a robust wind energy future.



The *Wind Vision Report* depicts a *Study Scenario*, which depicts wind power supplying 10% of the country's electricity from wind in 2020, 20% in 2030, and 35% in 2050. The *Study Scenario* quantifies the prevention of 12.3 billion gigatons of greenhouse gas emissions by 2050, which is equivalent to $400 billion in savings.

Additionally, the *Study Scenario* saves 260 billion gallons of water that the power sector would typically use, and it reports that the wind industry will be able support 600,000 jobs by 2050. This report includes contributions from four national laboratories and 11 task forces, which included more than 250 contributors from industry, academia, and others.

TOYOTA MIRAI FCEV

On January 29, 2015, EERE's Fuel Cells Technology Office showcased the world's first fuel cell electric vehicle (FCEV) available for commercial sale, the Toyota Mirai, outside of DOE's headquarters. The Mirai was first available for sale in Japan in December 2014 for $57,500, and it should be available for sale in the United States by mid-2015. Toyota will offer free hydrogen refueling for the first three years.

Energy Secretary Moniz and Under Secretary for Science and Energy Orr participated in the "Ride-N-Drive" by test driving the Toyota Mirai on the streets of Washington, D.C. Check out the "How Fuel Cell Electric Vehicles Work" blog post and view a video of Secretary Ernest Moniz driving the Toyota Mirai, the first FCEV for sale in the United States. Watch the video on Secretary Moniz's Twitter feed to see how it looks to drive an FCEV.

TOYOTA MIRAI

- Ability to cover about 300 miles on a single hydrogen fill-up
- Top speed is 111 mph
- Zero-to-sixty mph in nine seconds
- Priced at $57,500 with $499 per month lease
- Free hydrogen refueling for first three years

OFFICE ROUNDUP

Sustainable Transportation

Vehicle Technologies – The Vehicle Technologies Office's Clean Cities program held a five-year planning strategy meeting on February 25, with more than 200 stakeholders in attendance.

Clean Cities also announced selections for $6 million in projects to expand driver experiences with alternative fuel vehicles, increase training for critical service providers, and incorporate alternative fuels into emergency planning in mid-March.

Fuel Cell Technologies – In February, the Fuel Cell Technologies Office invested $10 million through its incubator to support innovations in fuel cell and hydrogen fuel technologies. In March, the office released a $35 million funding opportunity announcement to enable early adoption of fuel cell applications, such as light-duty FCEVs.

Alina Campbell, a graduate student at Oak Ridge National Laboratory (ORNL), removes damaged leaves from Eastern Cottonwood trees to help stimulate the trees' growth. At ORNL's Environmental Science Division, graduate students and researchers use transplanted trees in studies like biomass conversion to biofuels. (Photo courtesy of Jason Richards)

Bioenergy Technologies – The Bioenergy Technologies Office, partnering with the U.S. Department Agriculture, announced up to $8.7 million in funding for the Biomass Research and Development Initiative. This joint program will support the development of sustainable sources of biomass and increase the availability of renewable fuels and bio-based products that can help reduce the need for gasoline and diesel fuels and diversify DOE's energy portfolio.

Biofuels Digest recently released its "Top 125 in the Advanced Bioeconomy," ranking BETO Director Jonathan Male, Deputy Director Valerie Reed, Technology Manager Joyce Yang, and Lead Analyst Zia Haq collectively at number 20.

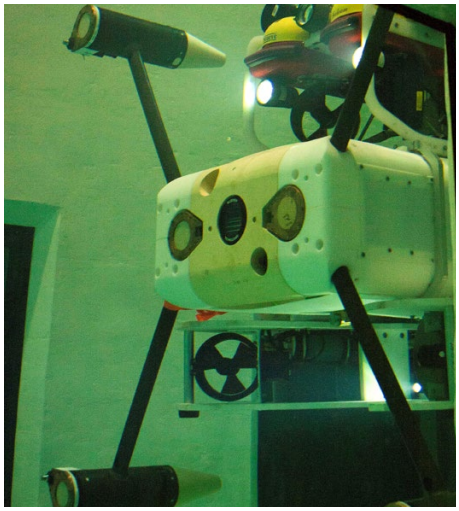
Renewable Power

Solar Energy Technologies – The SunShot Catalyst prize program also launched the largest-of-its-kind virtual hackathon, where 17 teams compete in the 60-day contest working with a network of approximately 700,000 coders, developers, and data scientists to quickly build prototype solutions and products that address near-term challenges to greater solar deployment. Stay tuned for Catalyst "Demo Day" in May.

Letters of intent for SunShot's Race to 7-Day Solar were due April 2. The competition aims to motivate local governments, communities, solar companies and electric utilities to collaborate toward improving the "going solar" experience from permit to plug-in for all Americans.

Water Power – Researchers from the University of Washington are using research funds from the Water Power Program to develop an underwater robot, nicknamed the Millennium Falcon, to monitor the interaction between marine life and wave and tidal energy equipment, as well as to help responsibly capture the clean, renewable energy in our waves, currents, and tides.

The Water Power Program opened registration for its Wave Energy Prize in April. In this two-year design-build-test competition, participating teams will seek to develop game-changing wave energy conversion devices that cut the cost of producing electricity from ocean waves in half. Teams will be able review the Prize Rules and register to participate in the competition on the Prize Administration Team's website.



The Millennium Falcon robot maneuvers underwater in a testing tank at the University of Washington (UW) Applied Physics Laboratory. The monitoring instrument, which is the white box in the middle, is guided by the robot's thrusters toward a docking station on the bottom of the tank. (Photo courtesy of the UW Applied Physics Laboratory)

Daikin McQuay Rebel commercial rooftop system was the first unit to meet DOE's Rooftop Unit Challenge.

Energy Efficiency

Advanced Manufacturing – The Advanced Manufacturing Office Industry Day workshop was held on February 25, 2015, in Atlanta, Georgia, to provide an opportunity for potential proposers to learn about the technical areas and proposal requirements for a potential Clean Energy Manufacturing Innovation Institute on Smart Manufacturing.

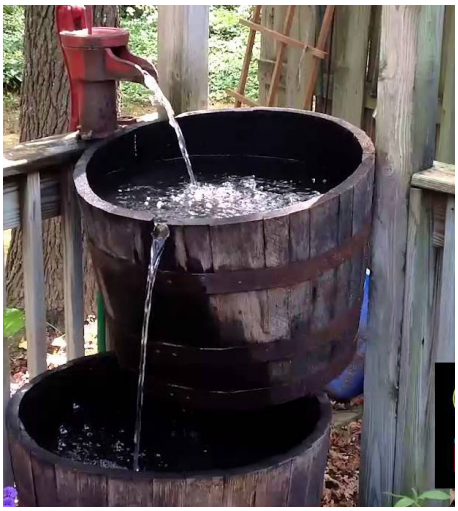
Smart Manufacturing is a network data-driven process that combines innovative automation and advanced sensing and control. It has the ability to integrate manufacturing intelligence in real-time across an entire production operation, while minimizing energy, material use, and costs.

Federal Energy Management Program – FEMP Director Dr. Tim Unruh participated in a February webcast on energy savings performance contracting (ESPC) with the *Federal Times*. This webcast was a follow up on an earlier interview with Dr. Unruh about the ESPC program and the ambitious directive set for federal agencies by President Obama to award $4 billion in performance contracts by December 2016 to implement energy and water saving projects at federal facilities.

With technical assistance provided by FEMP, federal agencies are nearing the halfway mark of the $4 billion President's Performance Contracting Challenge.

Building Technologies – The Building Technologies Office's Advanced RTU Campaign is a national initiative to promote market adoption of high-efficiency rooftop unit (RTU) air conditioners. Launched in May 2013, the campaign encourages commercial building owners and operators to replace their RTUs with units that are more efficient or to make them more efficient by retrofitting them with advanced controls.

The campaign hit a major milestone in 2015—more than 185 partners have implemented high-efficiency replacements or retrofits for over 25,000 RTU, saving more than $21 million per year cumulatively.



A photo of demonstrating the first energy principle of the 7 Essential Principles of Energy—energy is a physical quantity that follows precise natural laws. DOE, the Center for Geoscience and Society at the American Geosciences Institute, and the National Center for Science Education, developed a new video series highlighting each of these principles. (Photo courtesy of DOE and AGI)

Mission-Critical Support

Tech to Market – The team is excited about its new video series highlighting each of the seven Essential Principles of Energy and overview of energy. DOE, the Center for Geoscience and Society at the American Geosciences Institute, and the National Center for Science Education developed these videos to help educators bring key energy principles to the classroom.

All of the videos launched in March at the National Science Teacher's Association Conference.

EERE International – EERE International concluded its "Sustainable Energy in Business Districts" project this February, which completed building inventory audits of two municipal business districts in China. With its Chinese partners, the project principal investigator, Optony, Inc., identified 31% potential reductions in energy cost savings through energy efficiency and renewable energy technology applications.

District leaders and property owners in both districts pledged to adopt findings and recommendations as part of their urban sustainability plan, and DOE has moved forward in matchmaking U.S. companies—such as DOW, Siemens, and IBM—to the opportunities in these two districts.

DOE Partners with Military to Train Veterans for Solar Jobs

DOE's solar job training pilot program, "Solar Ready Vets" graduated the first class of 20 Marine trainees on February 13, 2015, at Camp Pendleton near San Diego, California. Camp Pendleton is one of three military bases partnering with the SunShot Initiative pilot program to train 200 transitioning military service members in the rapidly growing U.S. solar energy industry.

Following the first successful Camp Pendleton graduation, training will begin this spring at Fort Carson, a U.S. Army installation in Colorado, and at a U.S. Navy Norfolk, a base in Virginia.

In partnership with the Defense Department's SkillBridge Initiative, the program helps transitioning service members to receive training for civilian jobs up to six months prior to leaving the military.

With U.S. solar industry employment increasing nearly 86% in the past four years, returning service members have acquired skills from the military that make them valuable candidates to fill these positions.

Graduates of the program went through intensive 4–6 week training, and learned skills such as how to size and install solar panels, connect electricity to the grid and comply with local building codes to help prepare them for jobs in the solar industry.

Five of the largest solar companies in the United States—Vivint Solar, SolarCity, Sunrun, SunEdison, and SunPower—have committed to interview military trainees graduating from the solar job training pilot program.

Vivint validated the pilot program and demonstrated just how coveted these skills are by announcing that all 20 of the new graduates have received job offers by the residential solar leasing and installation company.

"As more homes and businesses across America choose solar power for their electricity needs, the solar industry is growing rapidly, and demand for highly skilled solar workers is on the rise," said SunShot Initiative Director Minh Le. "This new solar energy job training program will help our motivated, highly skilled service men and women gain the training they need to transition into leaders of our nation's growing clean energy economy."

A service member graduates from the solar job training pilot program at Camp Pendleton, California, on February 13, 2015. (Photo by Marine Corps Lance Cpl. Asia J. Sorenson

Through this program, the solar industry will continue being a leader in hiring military veterans, and of the 174,000 solar jobs nationwide, nearly 17,000 are military veterans.

Marine Corps Brig. Gen. Edward D. Banta and Minh Le, Director of the SunShot Initiative, co-host a graduation ceremony at Camp Pendleton, CA., for 20 transitioning service members who completed the Department of Energy's SunShot Initiative Pilot Solar Energy Training Program, February 13, 2015. All 20 service members have been offered jobs in the solar industry by Vivint Solar. (Photo by Marine Corps Lance Cpl. Asia J. Sorenson)

SOLAR QUICK FACT

In 2015, U.S. solar industry employment is expected to grow by more than 20%.

Energy Saver Tips: Springing Out of the Cold, Warmer Days Ahead

Even though it's early spring, cold temperatures are still lurking—especially for EERE West in Colorado. But, with a seasonal shift right around the corner, this month's version of Energy Saver combines energy-saving home heating tips, as well as tips on preparing for the heat of summer.

Heating Season

- Seal air leaks around holes for pipes and electrical wires, gaps around chimneys and recessed lights in insulated ceilings, and unfinished spaces behind cupboards and closets. Find out how to detect air leaks.
- Add caulk or weather stripping to seal air leaks around leaky doors and windows.
- Keep your fireplace damper closed unless a fire is burning. Keeping the damper open is like keeping a window wide open during the winter; it allows warm air to go right up the chimney.
- If you never use your fireplace, plug and seal the chimney flue. You can temporarily seal your chimney flue while not in use with a flue pillow/chimney balloon.
- A programmable thermostat can make it easy to set back your temperature, saving 5%–15% a year if you set it back 10°–15° for 8 hours. Find out how to operate your thermostat for maximum energy savings.
- Open curtains on your south-facing windows during the day to allow sunlight to naturally heat your home; close them at night to reduce the chill you may feel.

Preparing for Cooling Season

- Schedule regular maintenance for your cooling equipment before that first hot day hits. Learn about operating and maintaining your air conditioner, evaporative cooler, or heat pump.
- Clean range hood filters; wipe down bathroom fan enclosures; and vacuum supply and return registers to remove any dust buildup. Ensure that furniture and other objects are not blocking the airflow through your registers.

Rather than ratcheting up the heat or wasting money on a space heater, the Energy Saver blog dives into how you can identify and seal air leaks in your home, lowering heating costs and making your home more comfortable. (Images courtesy of the Energy Saver Blog)

GOLDEN CORNER: SIX SIGMA

Several EERE West employees have recently earned their Green Belts in Lean Six Sigma after completing two projects that drastically improved two EERE-specific processes. Using the "Define, Measure, Analyze, Improve, and Control" improvement process, these two teams worked together to streamline the Federal Energy Management Program (FEMP) Collections process and the Funding Opportunity Announcement (FOA) question and answer process with prospective recipients.

Some improvements made include the following:

- New cycle time in the FEMP Collections process is 86% more efficient
- New cycle time efficiency enables at least 7 times more throughput for FEMP Collections activities
- New cycle time for the FOA Q&A process is 56% more efficient
- Standardized email box folders were created for FOA Q&As to track questions.

Less time-consuming "Lean" events have been catching on in Golden, as well. Recent trainees have tackled the award closeout process and the process for booking a conference room. Both Lean and Lean Six Sigma focus on eliminating waste or unnecessary steps from a process in order to make it more efficient.

Tournament Time: 2015 Regional Science Bowl Competition

Every year, the National Science Bowl brings together thousands of middle school and high school students from across the country to compete in a fast-paced tournament, where they solve technical problems and answer questions on a range of science disciplines—including biology, chemistry, Earth and space science, physics, and math. A series of 118 regional middle and high school tournaments were held across the country from January through March.

Winners from the regional bowls will advance to represent their regions at the National Science Bowl, which will take place from April 30–May 4 in Washington, D.C. At the national event, students will have the opportunity to participate in science seminars and hands-on team challenges.

The national and regional science bowls are an important part of DOE's efforts to encourage America's youth to explore the fields of science, engineering, and mathematics. This event, established in 1991 by DOE, is designed to inspire a new generation of researchers in disciplines important to solving the energy and environmental issues facing the world. The National Science Bowl is the only educational event and academic competition of its kind that is sponsored by a federal agency.

Colorado High School teams compete in the 2015 DOE Colorado Regional Science Bowl at National Renewable Energy Laboratory (NREL) on March 7, 2015. (Photo by Dennis Schroeder, NREL)

This year, 11 EERE employees and contractors volunteered for DOE's Regional Science Bowl competitions at National Renewable Energy Laboratory on March 7, 2015. During the competition, each of the volunteers participated in positions that included both scientific and non-scientific roles like moderator, rules judge, and timekeeper. DOE headquarters also hosted a Regional Science Bowl for middle school students on March 14.

Students attending the Sidwell Friends School pose for a group photo after winning the 2015 Washington, D.C. Regional National Science Bowl Competition on February 14, 2015. Sidwell Friends School won the competition by beating Woodrow Wilson High School in overtime to advance to the National Science Bowl held from April 30 to May 4 in Washington, D.C. (Photo courtesy of DOE)

EERE would like to thank all of the EERE Volunteers who helped to make the Science Bowl a success!

President Obama Visits Forrestal

President Obama meets with White House Officials, Deputy Secretary of Energy Dr. Elizabeth Sherwood-Randall (far left), and DOE Officials at the Energy Department round table on March 19, 2015. Committed to addressing climate change, the President issued a new executive order that will cut the federal government's greenhouse gas (GHG) emissions 40% over the next decade from 2008 levels. Leading by example, DOE set a GHG goal to reduce its emissions 26%–28% by 2020, and as of 2013, DOE has exceeded that goal—cutting its GHG emissions by more than 34%. (Photo by Ken Shipp, DOE)

EERE Coffee Hour

EERE's Advanced Manufacturing Office hosted a Coffee Hour for EERE employees on February 10, 2015. Coffee and Power Hours provide an opportunity for EERE employees to mingle with colleagues, discuss upcoming projects, and collaborate on items, such as best practices. (Photo by Scott McCall, The Hannon Group)

Black History Month Observance

Michelle Scott (left), a member of the Association for the Study of African American Life and History, participates in a panel discussion on the life of Dr. Carter Woodson at the 2015 Black History Month Observance at the Jefferson Auditorium in Washington, D.C. The observance was an interagency event held between the Energy Department and the U.S. Department of Agriculture, and the theme was, "A Century of Black Life, History, and Culture." Woodson was an historian and known as the "Father of Black History Month." (Photo by Scott McCall, The Hannon Group)

Powerpedia

Mel Williams, former Associate Deputy Secretary of Energy, speaks on the importance of Powerpedia during the Powerpedia 5th Birthday and Games Award Ceremony held in Washington, D.C. Established on January 27, 2010, Powerpedia is designed to be a growing knowledge base of information tailored for and created by DOE employees to share information on DOE-related topics. Powerpedia has been viewed more than 2.3 million times, and editors have made more than 200,000 contributions. (Photo by Scott McCall, The Hannon Group)

EERE Staff Highlights Successes

The sixth annual ARPA-E Energy Innovation Summit—held February 9-11, 2015, at the Gaylord Convention Center in National Harbor, Maryland—focused on 250 ARPA-E-funded, high-impact energy technologies, as well as how to get the technologies from the lab into the market. EERE staff members showcased the groundbreaking science and innovation essential to the President's vision for addressing climate change. Summit attendees had the opportunity to see the EERE booth, which highlights its mission and successes.

Dr. Alison LaBonte, Marine and Hydrokinetic Technology Program Manager in the Wind and Water Power Technologies Office, describes how EERE's mission helps develop, demonstrate, and deploy high-impact cutting-edge technologies that make clean energy just as affordable and convenient as traditional forms of energy to an attendee at the annual Energy Innovation Summit. (Photo by Scott Minos, EERE)

MIT Energy Conference

Dr. Danielson (left) delivers a keynote speech on the 10th Anniversary Review for the MIT Energy Club at the 2015 MIT Energy Conference on February 28, 2015. During his speech, Dr. Danielson talked about EERE's successes in breaking down market barriers across its three energy pillars, as well as some of the challenges ahead. Topic areas included grid modernization in the 21st century, clean energy manufacturing, and the National Network of Manufacturing Innovation. Danielson was a co-founder and the first president of the MIT Energy Club. (Photo courtesy of EERE)

Be a Mentor or a Mentee with EERE's Mentoring Program

Mentoring is a developmental relationship based on shared goals, expectations, and trust—resulting in positive outcomes for the mentor, the mentee, and EERE.

EERE launched its first mentoring program in July 2014. Over the six-month session, as many as 30 mentoring pairs met regularly. Feedback was positive, with all surveyed participants saying they would recommend the program to their colleagues.

"I have learned to view my work from a different perspective, and I have been given a broader understanding of the work flow of EERE," said Colleen Curry, a former mentee.

The mentoring program is accepting applications for the next mentoring session, in which mentoring pairs will meet bi-weekly over the course of six months. Group mentoring will also be available.

"Anyone with the desire to help others, wisdom to share, and skills to teach can be a mentor. And anyone with the desire to learn and grow can be a mentee," said Johanna Sevier, the EERE Mentoring program manager.

Invest in yourself or someone else by pursuing a mentoring relationship. EERE will create matches on a first-come, first-served basis, with applications accepted in the month of April. To apply for the EERE Mentoring program, email mentoring@ee.doe.gov.

CALENDAR OF UPCOMING EVENTS

DOE Celebrates Earth Day

DOE celebrated Earth Day with special environmental exhibits and green energy activities at its Forrestal building, showcasing DOE program and site offices, federal agencies, and green energy exhibitors. In addition, Community Day was held on April 22, 2015, at the DOE Forrestal West Plaza, and featured more than 25 new green exhibitors, interactive displays, live musical performances, recycling opportunities, an electronic vehicle demonstration, popcorn, balloons, and a discounted luncheon sponsored by the DOE cafeteria.

Children react to the energy generated from solar power at DOE's Community Day. (Photo by Mike Mueller, The Hannon Group)

CALENDAR OF UPCOMING EVENTS			
Event	**Date**	**Start Time**	**Location**
National Science Bowl (NSB) Middle School Competition	May 2	9:30 a.m.	National 4-H Conference Center Chevy Chase, Maryland
NSB High School Competition	May 3	10:00 a.m.	National 4-H Conference Center Chevy Chase, Maryland
NSB Final Rounds Middle School and High School Competitions	May 4	9:00 a.m.	Lisner Auditorium at George Washington University Washington, D.C.
Plain Writing Training Class	May 21	9:00 a.m.	DOE Germantown, room A-410
Leadership Development Series	May 21	1:00 p.m.	DOE Large Auditorium

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