

NEWSLETTER OF THE APPA PROGRAM: DEMONSTRATION OF ENERGY & EFFICIENCY DEVELOPMENTS | VOL. 34, NO. 2 | SPRING 2016



Keeping Up With New Energy Technologies The DEED Advantage

By Mary Medeiros McEnroe, Public Benefit Program Manager, Silicon Valley Power and Director, DEED Board, American Public Power Association

Sue Kelly, president and CEO of the American Public Power Association recently kicked off the 36th Annual Utility Energy Forum with a <u>keynote presen-</u> <u>tation</u> that engaged the audience in thinking about how utilities will meet increased customer expectations in a time of transformation. Her presentation fit perfectly with the theme of the conference, "The Transformed Utility: Connecting for Success" and resonated with the audience.

Our industry is entering a time of great change driven by evolving customer preferences, new technologies, increasing regulation, and utility workforce issues, Kelly emphasized. Those of us in the industry know these changes are coming, or are here already. However, we're not entirely sure



how to deal with the changes yet and need to step up to the plate.

Kelly pointed out that even small communities are interested in new technologies and green energy, as evidenced by the dramatic increase in solar installations nationwide and the popularity of community solar programs. She noted that energy storage and other technologies are not yet commercially viable, but they are coming and utilities need to be prepared. We need to consider what our new business model will look like and what value we will provide to our customers as more products and services are offered by third parties.

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We may also want to offer some of these new products and services to our customers, either on our own or through partnerships. She talked about APPA's <u>Public Power Forward</u> strategic initiative to provide tools and resources to member utilities to help them navigate the future.

A common theme running through many of the presentations at the Utility Energy Forum was that utilities should strive to be the "trusted energy advisors" for customers. This is a role of value that utilities can offer customers who are looking to adopt new technologies and are bombarded with offers and promises from third parties. Public power utilities have strong ties to the communities we serve, and we are uniquely positioned to be seen as a trustworthy resource for accurate information about energy technologies. To step into the trusted energy advisor role, we must also become more knowledgeable about new technologies.

APPA's <u>Demonstration of Energy</u> <u>& Efficiency Developments</u> program is one way member utilities can learn about new technologies and talk with others who have implemented them.

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DEED OPPORTUNITIES

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Grants up to \$125,000 are available to DEED member utilities to work on innovative projects and there are opportunities to demonstrate and share what is learned with other DEED members through webinars, newsletters, and presentations.

At the Utility Energy Forum, APPA's Tanzina Islam shared a DEED-funded project on Conservation Voltage Reduction (CVR) undertaken by the City of Palo Alto Utilities to determine if CVR was a viable and economical energy efficiency technique. This presentation was part of the Utility Stand-Up Challenge, where presenters spend 15 minutes presenting their posters to a group of attendees and engaged in discussion about the project. The posters are presented four times so that many people have an opportunity to see the poster, but groups are small enough that a good dialogue can take place. Results of the project were shared, along with lessons learned from the pilot. Other utilities that have tried CVR or are interested in deploying it were able to ask questions, share experiences, and make connections for future collaboration.

The Utility Energy Forum includes a focus on technology where pilot program results can be shared. Sometimes, new products not yet on the market are also showcased. This year's sessions included topics such as connected devices for customers, the automated use of demand-side resources to improve grid operations, and concepts in connected lighting. At last year's forum, the results of a DEED-funded Tier II Advanced Power Strip Study was presented. This study was conducted by a DEED student intern with assistance from the utility and the product manufacturer. On graduation, the student was later able to use the study as a part of his portfolio to launch his career.

The DEED program not only provides grants for utility projects, but it also funds student research projects, provides educational scholarships to undergraduate students considering a career in the energy industry, and funds student internships at utilities. These internships allow utilities to carry out innovative projects while exposing students to a possible career in public power and providing valuable mentorships and work experience. One great example of this is a DEED-funded electrical engineering internship at Lewis County PUD, where the student was hired into a full-time position at the utility upon graduation. This internship was highlighted at last year's Utility Energy Forum as a part of a panel on workforce development. As Sue Kelly mentioned in her keynote presentation this year, workforce issues are a challenge for our industry and we are facing a shortage of employees in key areas. We need to expose students to the possibilities of a career in public power and a DEED internship is one great way to make this happen.

DEED accepts new grant and scholarship applications in two cycles every year. The next round of grant applications is due August 15 and scholarship applications by October 15. I encourage you to find out more and apply now. If you're not already a DEED member, you can join now. Visit <u>www.PublicPower.org/DEED</u> for details.

DEED GRANTS & SCHOLARSHIPS

Apply for Grants and Scholarships

Get up to \$125,000 in project funding or host a student intern

DEED members may apply for up to \$125,000 to fund innovative utility projects to increase efficiency, reduce costs, investigate new technologies, offer new services, and improve processes and practices to better serve customers. Applications for funding are due to APPA by August 15, 2016. Grant decisions are made by the DEED Board of Directors and will be announced mid-October.

You may also apply to host a student intern at your utility. DEED offers four types of scholarships to introduce students to career opportunities in public power — educational, student internship, student research grant, and technical design project. Students must be studying in energy-related disciplines and must be accepted or enrolled full-time in vocational schools or accredited colleges and universities. DEED scholarships link communities and utilities. Students gain work experience, earn financial support for their education, and may be eligible for college credit. The utility or the student may initiate the scholarship application process. If your utility is initiating the application, you can do so without designating a specific student. Applications for interns open August, 2016 and must be submitted by October 15.

Learn more, explore project ideas and partners, get help from the experts, and apply online — all at <u>www.PublicPower.org/DEED</u>.To apply for a grant or scholarship using our web-based application system, email <u>DEED@PublicPower.org</u> and request log-in credentials.

Note: DEED does not support standard system upgrades, normal maintenance activities, or capital improvement projects.



River Falls Wins Award of Continued Excellence

River Falls Municipal Utilities in Wisconsin won the American Public Power Association's 2016 DEED Award of Continued Excellence. The award was presented during APPA's annual Engineering & Operations Technical Conference in Minneapolis, Minnesota in April.

"We are proud and honored to be able to continue to reflect our community values through our local municipal utility with the use of programs such as DEED," said RFMU Director Kevin Westhuis, who accepted the award.

The award recognizes continued commitment to the DEED program and its ideals, including support of research, development and demonstration, improving efficiency, renewable resources, and support of public power.

"For 17 years, River Falls has been active in APPA's DEED program," said APPA President & CEO Sue Kelly. "It has worked diligently to develop programs to promote renewable energy and energy efficiency, and it has been quick to share results with other public power utilities."

As part of the DEED program, RFMU has provided two schol-



Left to right: Jeff Feldt, DEED Board Chair; Mike Noreen, Conservation and Efficiency Coordinator, River Falls Municipal Utilities; and Michele Suddleson, DEED Program Director, APPA.

arships to students attending the University of Wisconsin – River Falls. In 2012, the utility worked with a student who studied the implications of land use change on soil organic carbon and sequestration opportunities in western Wisconsin. The research developed strategies to curb carbon emissions through improved agricultural practices.

A Habitat for Humanity Eco Village in River Falls — established through alternatives to conventional residential development approaches — provides high efficiency housing for low-income citizens. RFMU is working with a student to investigate whether net zero and LEED build-ings in the Eco Village will provide a more viable option — economically, socially, and environmentally — than conventionally built homes.



At the National Conference

Learn more about River Falls Municipal Utilities' project in Eco Village at the APPA National Conference and Public Power Expo, June 13 – 15, in Phoenix, Arizona. Stop by the DEED booth at the Expo to view the poster presentation by Natalie Johnsen, RFMU intern, on energy efficient vs. conventional construction. Plan to attend the breakout session, Energy Efficiency for Tomorrow's Customers, Tue, June 14 from 11 am to noon.



DEED COMPLETED PROJECTS & SCHOLARSHIPS

Completed DEED Projects & Scholarships

Clean Air, No Filters

In January 2016, **Seattle City Light** in Washington used a DEED grant to develop a new plasma-based ionic air filtration technology to enable energy efficient operation of HVAC systems. The utility collaborated with the University of Washington on this project.

Commercial use of ionic wind purification has long been limited to industrial electrostatic precipitators, which operate in temperatures that are too high for fiber-based filters. ESPs do not efficiently remove fine particles that cause respiratory health concerns — so many commercial ESPs are augmented by a pre-filter and/or a post-filter.

This DEED project developed a new plasma-based filtration technology that has high particle removal rates for submicron particles while maintaining a low pressure drop, to bring ESPs one step closer toward non-industrial applications. This newly developed ESP has high collection efficiency ratings and does not require pre or post filters.

The University of Washington has formed a spin-off company, Pacific Air Filtration, that has received an initial venture capital investment and is preparing the plasma-based air filter for the market, by testing prototypes in air ducts.

Learn more in the <u>DEED Project</u> <u>Database</u> — search for project G-341.

Tagging the Biggest Losers

The City of Aspen, Colorado was concerned that its distribution system losses — at 7.3% or approximately 5,200 MWh per year — were above the national average system loss of 4%, and possibly increasing over the years. Under a DEED grant, the Utilities Department contracted with the NMPP Retail Utility Services

Department to conduct an audit of Aspen's electric distribution losses to help understand if line and transformer losses were reasonable and suggest steps to better identify where and when losses were occurring and how to reduce them. Evaluation of system loss data - obtained by comparing metered sales to customers to the total energy procured — showed a strong seasonal pattern. System losses spiked during months of peak occupancy and economic activity in Aspen. For example, system losses for the month of December were approximately 22% of energy purchased that month and nearly 30% of the total system losses over the entire year, whereas off peak months such as May showed a much lower rate of loss of around 5%. High loss during peak usage indicated copper losses in transformers, which increase exponentially with power usage. NMPP also identified a number of transformer installations that were installed with significant load imbalances.

Based on several findings, NMPP recommended that the City of Aspen contract with a qualified distribution engineering firm on a master expansion and renewal plan — including but not limited to fuse coordination, loading of feeder circuits, peak load reduction strategies, and installation of an AMI system — to provide cost savings and operational benefits.

Learn more in the <u>DEED Project</u> <u>Database</u> — search for project G-342.

Efficiency in Reporting Efficiency

A DEED scholarship helped the **Iowa Association of Municipal Utilities** hire a student intern, Jeb Kopera, to file the IUB Biennial Energy Efficiency reports for 158 gas and electric utilities in 2016. The intern contacted all 158 utilities by email or phone to get information on past and future energy efficiency programs and energy savings to customers. He compiled this information and calculated necessary data for the reports. Kopera helped to improve the reporting tools and calculation forms. He also developed a presentation that offers an overview of the public power industry. The intern carried out additional minor projects, which increased his understanding of the scope and diversity of Iowa's public power utilities.

Learn more in the <u>DEED Project</u> <u>Database</u> — search for project S-203.

Lighting Up the Savings with an App

The Northern California Power **Agenc**y hired a DEED-funded intern, Aaron Blancaflor, to develop a web application to estimate a potential rebate for a customer upon replacement of existing lighting fixtures with more energy efficient fixtures. Blancaflor's web-based lighting calculator estimates the energy savings from lighting retrofits completed by customers of NCPA's member utilities. The browser-based app has a straightforward user interface that allows lighting contractors and utility staff to easily generate savings and rebate estimates for lighting projects. Before the app was developed, NCPA member utilities relied on an Excel-based spreadsheet to calculate the energy savings from lighting projects but the multiple tabs and complex user interface did not allow for easy mobile use at project sites. The new web-based app is specifically designed for tablets/laptops and the user interface has been simplified.

Learn more in the <u>DEED Project</u> <u>Database</u> — search for project S-204.

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DEED Board: Appointments and Departures

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Hands-on Experience Lures Student to a Utility Career

Lincoln Electric System in

Nebraska used a DEED internship to employ a qualifying college student, Jean-Baptiste Mekpato, to work in its customer service department for 10 weeks. The student assisted utility staff with bill inquiries, energy audits, meetings with commercial and industrial accounts, and design of energy efficiency incentives. As a global knowledge of the company is valuable in the customer service department, LES exposed the CO-OP student to as many training opportunities and aspects of the company as possible during the 10-week period. Mekpato's greatest area of interest was in the field of commercial energy audits. During the CO-OP period, he was exposed to both residential and commercial audits (relatively small commercial buildings that consisted of office and warehouse spaces). A staff member accompanied him to original site assessments for two residential audits and one commercial audit. He was then allowed to perform two commercial audits on his own. Upon graduating, Mekpato plans to pursue a career in a utility customer service department.

Learn more in the <u>DEED Project</u> <u>Database</u> — search for project S-205. DEED is led by a board of your peers, who evaluate research needs, set policy, and award grants and scholarships. The 12-member DEED board of directors includes representatives from small, medium, and large public power utilities; state associations; and joint action agencies across the U.S.

The DEED board welcomes five new directors in 2016:

Liz Jambor, Manager of Data Analytics & Business Intelligence, Austin Energy, TX, represents Region 4 — Arkansas, Louisiana, Oklahoma, Texas.

Victoria Zavattero, Director, Research & Development at the Sacramento Municipal Utility District, CA represents Region 6 — Arizona, California, Nevada.

Brian Coate, Electric/Fiber Department Manager, Tullahoma Utilities Board, TN, represents Region 7 — Alabama, Kentucky, Mississippi, Tennessee.

Christopher Roy, Assistant Director, Concord Municipal Light Plant, MA, represents Region 8 — Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

Judy Visscher, Environmental Regulatory Specialist, Holland Board of Public Works, MI, joins the DEED board as the vice chair of APPA's Engineering and Operations Committee.

Thank you and kudos to our retired DEED board members for their outstanding service:

Philip Lim, Manager, Electric Distribution System Engineering, Murfreesboro, TN

Mike Bacich, Assistant General Manager Customer Relations & Marketing, Riverside Public Utilities, CA

Carl Lemiesz, Chief Engineer, Wakefield Municipal Gas & Light Department, MA

Darryl Strother, Electric Superintendent, City of Rocky Mount, NC

Roger Farrer, Energy Services Manager (retired), Oklahoma Municipal Power Authority

APPA is seeking nominations for a DEED board director for Region 2 — Illinois, Indiana, Michigan, Ohio, and Wisconsin — to start in fall 2016. Utility, joint action agency, or association executive or operations staff with DEED member organizations in Region 2 are eligible for nomination. Nominees should be familiar with local, regional and national industry issues, especially in energy R&D and engineering technologies. The deadline for nominations is September 2, 2016. To nominate, review the memo and nomination form online.



Spring Grants Fund Innovation in Solar, Efficiency, Grid Resilience

DEED recently awarded \$436,250 in utility project grants and scholarships.

"We are pleased to fund a range of projects spanning community solar, small modular nuclear reactors, smart grid solutions, and safety. DEED members are taking on the future and showing the path forward for public power," said Jeffery Feldt, general manager of Kaukauna Utilities in Wisconsin and chair of the DEED board that selects awardees from among applicants.

Michele Suddleson, director of APPA's DEED program noted, "Public power utilities are creative and come up with innovative ideas to meet energy needs in their communities. APPA's DEED program helps to turn these ideas into pilot programs and share project success for broad replication by other public power utilities across the country."

Grant and scholarship applications are accepted twice a year. In this latest spring 2016 funding cycle, eight grants were approved for pilot projects at public power utilities.

Algona Municipal Utilities in lowa won a grant of \$13,000 to develop a tool to mine AMI data to model customer loads for small public power utilities. It will develop an Excel-based tool to process smart meter data to understand load behavior of residential, single family, multifamily, all electric, urban and rural, small and large commercial and industrial customers as well as public buildings. The insights into load behavior can help utilities design new demand response programs, analyze costs and benefits of customer and utility installed PV, and generate virtual load profiles for non-AMI customers.

The American Public Power Association was awarded a grant of \$70,500 to develop a web-based safety tracking software to help public power utilities take advantage of safety best practices and work together to improve worker safety. The software will help utilities easily keep records of job briefings, near-miss reports, illnesses, and injuries. The software will also provide access to a searchable digital version of the APPA Safety Manual and allow a utility to record safety related training for compliance purposes. The software will also empower quality safety benchmarking and enable root cause analysis of safety hazards across the industry.

The **City of Shelby Municipal Utilities** in Ohio was awarded \$15,000 to improve asset management to get the most out of past infrastructure investments and understand future needs. The utility will test the Vonaq non-destructive, vibrational testing system to quantify the condition of its wood power poles. Shelby will couple the testing with a web-based asset, maintenance management and inspection system to upgrade its paper and CAD maps for future GIS and smart grid projects. The project will help the utility better understand the rest of its infrastructure.

City Utilities of Springfield, Missouri won a \$20,000 grant for a pilot project to reduce electricity consumption in buildings while increasing the use of renewable energy and incorporating energy storage. The utility will build an all-DC solar microgrid home using only DC appliances and equipment to determine if it is more energy efficient than an AC solar microgrid home. The project will design and install the building-scale DC power distribution network with a solar unit as well as an energy storage system. Benefits will be validated through real-time monitoring and metering. The project will also examine the feasibility of DC-powered buildings.

Fayetteville Public Works Commission in North Carolina received \$5,000 to test a remedy for volatile organic compound groundwater contaminant plume. Chlorinated solvents, which are highly toxic and resistant to natural biodegradation processes, are one of the most common groups of groundwater contaminants. The pilot will determine if a solar-powered, in situ hydrolysis process can produce and distribute sufficient hydrogen in groundwater to enhance biodegradation of the contaminant plume. Lessons learned should be transferable to other power generation sites with volatile organic compounds in groundwater.

Hull Municipal Light Plant in Massachusetts received a grant of \$57,750 to use intelligent LED street light controllers to track outages in remote areas and report them into a SCADA system to facilitate quick response. As the entire town of Hull converts to LED street lights over the next two years, the utility plans to install controllers at strategic street lights as an inexpensive outage management system. The controllers will also help to avoid isolated pockets that remain without power long after a large scale restoration.

Roseville Electric Utility in California received \$50,000 to assess a community solar project interconnected to its distribution system. The project will be located

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Innovations in On-Bill Financing Programs

Webinar, June 29, 2 – 3 pm EDT



Continued from page 6 on city-owned land and include a ground-mounted solar array between 500 kW to 900 kW, with space for a future advanced battery energy storage system. The utility expects 200 to 400 customers to participate. The grant-funded pilot will explore a partnership between the utility, its customers, and a third party solar vendor. The business model will be determined during a competitive request for proposal process. Roseville will share lessons learned through a community solar guidebook to help other public power utilities assess community solar.

At least 15 public power utilities in eight states offer on-bill financing programs to customers. Register for the DEED webinar on June 29 to learn how two public power utilities in Bloomfield, Iowa, and Holland, Michigan, are preparing to launch "on-bill financing" programs for residential energy improvements. These utilities will tell you about their energy loan programs, and how they fit into each city's broader energy plans.

The energy loan programs provide financing to residential customers for energy efficiency improvements and/or distributed generation systems. Participating customers repay the utility over time as a per-meter charge on their electric bills. The loan programs offer non-traditional underwriting criteria in order to make the loans accessible to as many utility customers as possible. The Holland and Bloomfield program designers will share what they learned from other communities, and their own innovations.

This webinar is ideal for utility staff in customer service, finance, energy services, and legal. The webinar is free to DEED members, \$99 for APPA members, and \$199 for nonmembers. <u>REGISTER NOW</u>

Utah Associated Municipal

Power Systems, a joint action agency in Utah, received \$125,000 to support site selection, characterization and permitting activities and the preparation of key licensing documents for a combined construction and operating license application to the U.S. Nuclear Regulatory Commission for deployment of a first-of-its-kind nuclear small modular reactor. An SMR introduces differences in design, construction, and operation that have not been addressed in nuclear licensing. Some of the unique SMR features include multiple small nuclear power units within a single reactor building, operations of multiple modules from a single control room, intrinsic security provisions, smaller plant footprint (nominally 40 acres), factory built, and simplified emergency planning provisions.

The DEED 2016 spring funding cycle also approved multiple student research grants and internships. DEED funding of \$5,000 supports the student, including up to \$1,000 in travel funds to attend a public power conference.

Bryan Texas Utilities in Texas will host one Texas A&M University student to investigate mathematical models to estimate weather-related power outages using historical outage data provided by the utility. The estimates can help reduce the frequency and duration of outages and provide benchmarks for future years. The utility has a second scholarship to host a student who will examine how to reduce weather-related outages by switching out transmission lines to change the way electricity flows through the system and thereby alleviate violations, congestion, and overloading conditions. This student will introduce a paradigm shift by exploring the feasibility of a flexible transmission grid.

Nashville Electric Service in Tennessee will host a student from Western Kentucky University to develop a web application for substation visitors to electronically check in and check out. A back-office interface will be developed to provide a real-time view of who is at any given substation and to view substation check in and check out history. This project will allow substation visits without the 50-100 calls per day to the main office that are currently the norm.

River Falls Municipal Utilities in Wisconsin will have a student from the University of Wisconsin-River Falls examine how to protect the site of one of its community solar gardens against soil erosion and invasive encroachment. The student will evaluate possible vegetation that will provide the site with slope stabilization and also find native pollinator species which can survive in the light and moisture conditions created by the solar panels.

The **University of North Carolina** at Charlotte, North Carolina will have a student work on the development of a high-efficiency concentrating solar power tower plant in which a large number of mirrors or lenses are used to concentrate incoming solar energy to a small area. The solar energy can be converted to thermal energy and then to electricity. This project will explore ways to achieve higher mirror-to-electric conversion efficiency with lower cost.

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Continued from page 7 Seven utilities were awarded grants to bring in student interns for special projects.

Austin Energy in Texas will host an internship program which will provide electric utility work experience to engineers. Engineers will get hands on experience through a paid internship and learn about career opportunities in public power. Austin Energy will also have an intern monitor data from its Electric Drive Solar Station to analyze consumer usage trends, system reliability, and power efficiency. The data analysis will shape future plans for the project. The intern will increase public awareness about electric vehicles and solar energy.

Georgetown Utility Systems in Texas will hire an intern to support the rollout of a solar program for residential customers. The intern will help to develop internal business processes, create informational material, and determine benefits to customers and the utility of rebates and other incentives.

Holland Board of Public Works in Michigan, will receive help from an intern to design and develop marketing communication plans, educational materials, and events to effectively present Holland's Community Energy Plan to the community, including the utility's residential conservation programs and participation in the Georgetown University Energy Prize competition.

Lodi Electric in California will get an intern to help establish a data connection between the automatic meter reading system and distribution circuit model. This will provide circuit intelligence behind the meter data and will be used to analyze actual load trends. The information can be used to optimize transformer sizes for future developments and to recognize outages pro-actively.

Oregon Municipal Electric Utilities Association will hire a law student intern to seek restitution for the prolonged nonpayment of pole attachment fees by certain companies to the City of Drain. With just over 10 full-time employees, the City of Drain lacks adequate resources to address on its own this violation of local and state law.

Silicon Valley Power will use a student intern to develop multiple short — 15-second to 2- minute — educational videos on energy efficiency and electrical safety for its residential customers. These videos will be used in outreach via the local government cable channel, as well as on the utility's website and social media channels.

The following public power utilities and organizations sponsored students for educational scholarships of \$2,000 each:

- City of Hamilton, Ohio
- City of Tallahassee Electric Utility, Florida
- Indiana Municipal Power Agency
- Northern California Power Agency, California
- Orlando Utilities Commission, Florida
- Rolla Municipal Utilities, Missouri
- Traverse City Light and Power, Michigan
- Village of Rantoul Light and Power Department, Illinois
- Western Area Power Administration
- Westfield Gas and Electric, Massachusetts

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Resources in Innovation

Understanding OSHA Changes: A Reference Guide with Checklists, published by APPA, helps you comply with recent amendments to federal safety regulations 29 CFR 1910.137 and 29 CFR 1910.269. Funded by a DEED grant, the guidebook contains an overview of new OSHA requirements, an appendix with definitions, charts and tables, and digital checklists and forms to use in verifying compliance. The guidebook addresses safety in relation to protective equipment, training, materials handling and storage, various work settings from substations to exposed energized parts, live-line tools, first aid, and more. This is an essential resource for utility safety and training directors and supervisors, line crew leaders, lineworkers, and operations managers.

DEED Member: \$50; APPA Member: \$125; Nonmember: \$250 Order on the <u>APPA website</u>.

Mobile App Framework for Electric Utilities, is available as a recorded webinar on the outcomes of a DEED project by Greenville Utilities Commission. GUC needed to access business support systems while operating on assets and working with customers in the field throughout a geographically dispersed service area. Many of GUC's technology investments were being underutilized as they could not be accessed away from the office environment. GUC developed a mobile app framework to access all systems and replaced about 200 expensive field laptops with iPads, resulting in a total savings of approximately \$500,000. Learn how you can leverage the benefits of mobile access for your utility. *Download the webinar presentation and audio recording from the APPA website.*

Missouri S&T Solar Village Microgrid, is available as a recorded webinar on the outcomes of two DEED projects by the City Utilities of Springfield, Missouri. The utility partnered with Missouri University Science and Technology to turn their campus "Solar Village" into a community microgrid with multiple distributed energy generation sources and electrical loads. Four student-built solar homes were connected to a central Lithium-Ion battery bank. The microgrid includes smart switchgear that optimizes energy use throughout the day, and can be islanded from the main grid. The project demonstrated shared energy through community storage and dynamic peak shaving in a small community. It allowed City Utilities to demonstrate the benefit of load management. Students in the solar village provided real-time feedback on the performance of the microgrid. Share lessons learned in community storage, energy efficiency, and microgrid management.

Download the webinar presentation and audio recording from the APPA website.

APPA's **DEED Project Database**, with exclusive access for DEED members, presents detailed reports on hundreds of DEED projects over 35 years. Search, learn from, and replicate any of 500+ innovative projects, through comprehensive project reports, videos, and toolkits. Get contact information for your colleagues from other public power utilities that have spearheaded these projects and connect with them to learn more. The projects span energy efficiency, demand response, reliability, lighting, renewable resources, smart grid, solar, and environmental issues. The DEED Project Database is also an excellent source of ideas for demonstration projects you can conceive and seek grant funding for at your utility. *Access the DEED Project Database at no cost if you're a DEED member.*

Incorporating Demand Response into Community Solar Programs, a free publication produced by the Community Solar Value Project and funded by the U.S. Department of Energy, helps utilities address grid integration issues arising from growth in solar. The guide outlines how utilities with community solar programs can integrate demand response measures to optimize solar generation profiles with system loads and address solar variability. *Download the guide from the Community Solar Value Project website.*

This Is Advanced Energy profiles 52 technologies and services in advanced energy — how they work, how they are currently deployed, and how they are changing our energy system. Across the country, these technologies are being used to lower costs for consumers, improve reliability and resilience, offer more customer choice and control, and increase market competition. This free directory describes energy storage, advanced metering infrastructure, combined heat and power, fuel cells, demand response, microgrids, and more and is published by Advanced Energy Economy. *Download the directory* from the Advanced Energy Economy website.