ENERGY SERVICES Bulletin
The energy and planning resource for WAPA utilities
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WESTERN AREA POWER ADMINISTRATION

Community solar project expands VEA solar portfolio

VEA's 54,000-panel solar plant produces enough electricity to power 2,500 homes. (Photo by Valley Electric Association)

A leader in solar water heating programs is now adding 15 megawatts of photovoltaic energy to its electricity supply. Valley Electric Association (VEA) has constructed a 54,000-panel solar plant on 80 acres of desert near the California-Nevada border and plans to sell the power to members at a lower price than their current electric rates.

The community solar project located just north of Pahrump, Nevada, VEA's home town, produces enough electricity to power 2,500 homes. The goal of the plant, according to VEA CEO Thomas H. Husted, is to give members more choice of energy resources.

Members were showing interest in solar but weren't able to install their own arrays, said Kristin Mettke, VEA executive vice president of Engineering and Compliance. "Also, there aren't many large solar contracting companies in our service area," she said. "This project was a good way to offer solar to our members at an economy of scale."

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VEA plans to turn the project into a subscription program. For now, however, the clean electricity is helping the co-op meet its growing demand with a low-cost resource.

Partnering to protect wildlife

Even projects intended to save money—and the environment—come with complications, however, and the community solar project was no different. The chosen site was home to sensitive plants and the threatened Mojave Desert tortoise, so accommodations had to be made.

VEA and solar contractor Bombard Renewable Energy worked with the U.S. Fish and Wildlife Service to develop a habitat conservation plan to minimize the disturbing effects of construction "It gave us the opportunity to try different approaches," observed Mettke.

Measures included relocating tortoises to a temporary habitat before beginning construction and installing temporary fencing and tortoise-proof access gates to prevent them from returning. The completed project had a permanent security fence with tortoise access points to allow the animals to reenter the site.

To provide habitat for the tortoises, the native vegetation was mowed, crushed or trimmed, rather than removed. Increasing the height and spacing of the PV panels and installing them to follow the natural undulations of the land will also allow the vegetation to recover more quickly after construction.

Solar water heater pioneer

The community solar project continues VEA's tradition of using solar solutions to provide members with affordable power. In 2009, the co-op launched what was, at the time, the largest solar hot water program in the country.

For around $30 per month paid on-bill, members can install a Rheem solar water heating system. This highly efficient technology uses the sun's heat to reduce the need for conventional hot water heating by as much as two-thirds. Members can save about $250 to $540 in annually and enjoy 50-100 percent greater hot water capacity.

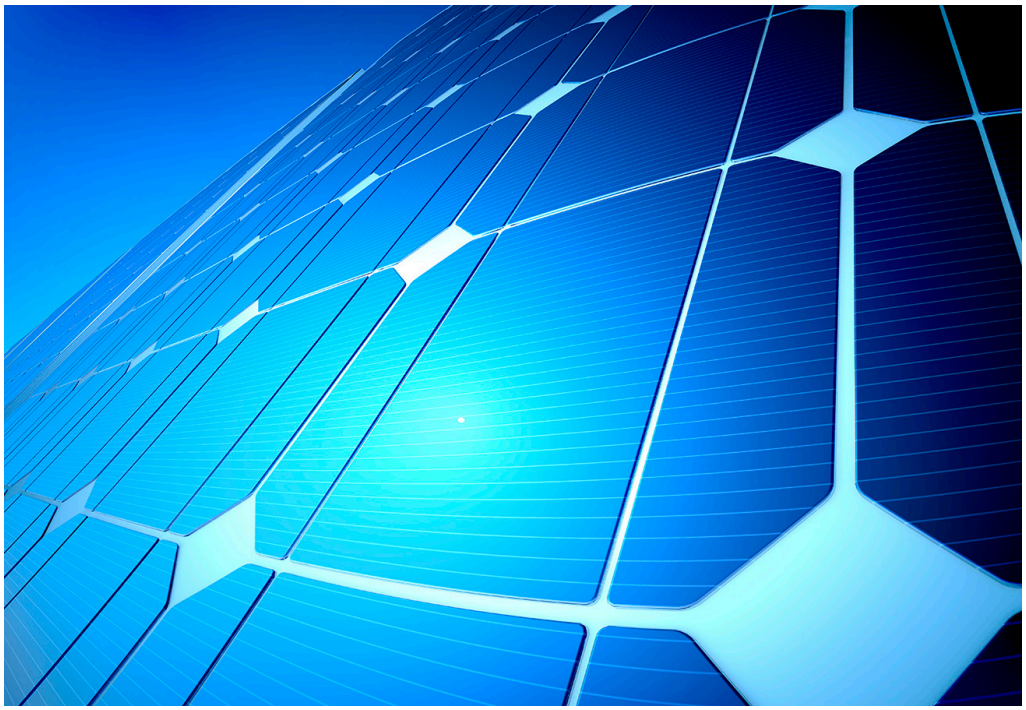
With 835 systems installed to date, the program avoids more than 3,000 pounds of carbon dioxide emissions annually while building local workforce skills. VEA estimates that solar water heating will save members about $34 million over the next 20 years by decreasing peak power demands and delaying future upgrades to capital infrastructure.

Planning next steps

Now that the solar project is completed, VEA has begun to talk with battery vendors about adding backup storage. "A battery system would complement solar power and help with resource adequacy and shoulder times," said Mettke.

The co-op is also developing a subscription program that would allow members to lease panels. The program would be introduced through VEA Ambassadors, members who take an active interest in the day-to-day operations of their utility and who offer feedback on VEA initiatives, activities and policies from a consumer perspective. The Ambassadors were instrumental in rolling out VEA's solar hot water program in 2009.

The solar hot water program and now the utility-scale community solar project have given VEA valuable hands-on experience developing and integrating renewable generation. That expertise may someday come in handy for developing cost-effective clean energy projects for California. The co-op became the first out-of-state utility to join the California Independent System Operator balancing authority in 2013, a move that could present such opportunities to VEA. It would be a challenge, but if it strengthens member relations and builds local workforce skills, Valley Electric Association is up to it. ■



Silicon Valley Power honored for small business efficiency efforts

The California Municipal Utilities Association (CMUA) has awarded Silicon Valley Power (SVP) the 2017 Resource Efficiency & Community Service Award for an innovative small business efficiency program. The Small Business Snapshot Audit and Direct Install Program won the Best Energy Program for a Large Municipal Electric Utility at CMUA's annual meeting in March.

John Roukema, Director of Electric Utility for Silicon Valley Power (center), receives the Resource Efficiency and Community Service Award from the California Municipal Utilities Association. CMUA President Michelle Bertolino (left) and Executive Director Barry Moline (right) presented the award. (Photo by Silicon Valley Power)

Aimed at business customers with a demand of 200 kilowatts (kW) or less, the program helps the notoriously hard-to-reach sector lower energy bills by installing energy-efficient products. Smaller businesses are the ones that can benefit the most from money- and energy-saving utility programs, observed SVP Public Benefits Manager Mary Medeiros McEnroe. "But they usually don't have the time, up-front money or awareness to take advantage of utility offerings," she said.

Innovative delivery

To overcome those barriers, the utility designed the program to be high-penetration, low-cost and focus on the customer experience. Eligible customers received a free "snapshot" energy audit and a report for energy-saving recommendations. A third-party contractor provided and installed the energy-efficient products, so that the customer did not have to manage the process. "We have offered audits in the past, but without the direct-install component or the contractor relationship," Medeiros McEnroe explained.

Perhaps the greatest factor in the program's success was that Silicon Valley Power opted to provide the measures at no cost to the customer. The products included easily installed indoor and some outdoor lighting, exit and open signs, pre-rinse spray valves and faucet aerators.

The program was so popular that Silicon Valley Power extended it two additional years, through Fiscal Year 2016-2017, and added more products. "In the second round, we offered energy-efficient replacements for T-8 or T-12 tubes that weren't on the market the previous year," recalled Medeiros McEnroe. "We also added outdoor wall pack light fixtures, which became one of the most popular measures."

Active partner

This program marked the first time Silicon Valley Power partnered with the utility consultant Efficiency Services Group, chosen through a competitively bid request for proposals.

The contractor's field representatives serve as the point of contact for the customers. Working from a detailed customer list the utility provided, the representatives called on small businesses in person, performed the free audits and installed equipment—usually efficient light bulbs— right on the spot. In the case of more expensive outdoor lighting, customers received additional free products they could install themselves if they liked the performance of the "sample," and representatives returned to inspect the installation.

Win for everyone

Over two phases, the work saved almost 2 million kilowatt-hours for small business customers in Santa Clara, equating to more than $300,000 annually. Customers who were eligible for water efficiency measures also achieved water savings, and Silicon Valley Power gained information on customers' electricity use that can be used to develop future programs.

The data the program collected also highlighted how different small business customers are from each other. "There is not a lot of overlap," Medeiros McEnroe pointed out. "But we have been able to mine the information to create more targeted programs."

For example, the utility is reaching out to food service customers who participated in the small business program to enroll them in an online Food Service Energy Efficiency Expert training program. Based on the data, Silicon Valley Power also target marketed for a rebate for rooftop air conditioning unit controls that it is now rolling out to customers.

WAPA congratulates Silicon Valley Power on earning the CMUA award, and especially on its success in bringing efficiency programs to the small business sector. When it comes to innovation and consumer satisfaction, our customers lead the pack. ■

Utility Dive lists Top 10 transformative trends: What do you think?

Transformation could be the most overused word in the electric utility industry these days. Big data, energy storage, the internet of things and electric vehicles are just a few of the technologies we are being told will change the way we do business forever.

But what utility professionals see on the ground may be quite different, both from what we hear and from what others utilities are dealing with. The trends that are actually affecting your utility depend on what part of the country you serve, what your customer base looks like and whether you are an investor-owned or public power utility.

To get a sense of where the utility industry is headed, the online magazine Utility Dive recently identified 10 trends that seem destined to shape our near future:

10 **Coal power in decline** – Since 2009, 25 gigawatts (GW) of coal capacity has retired in the U.S., and another 25 GW of retirements are planned by 2022. However, the Environmental Protection Agency still expects coal to be a major fuel source for electricity generation through 2030.

9 **Natural gas is growing fast** – As market conditions and regulations push older coal generators into retirement, utilities are increasingly looking to gas plants to add reliable capacity quickly. Analysts still expect it to grow steadily over the coming decade and then switch to retirement between 2020 and 2030, a trend that could come sooner if natural gas prices rise from their historic lows.

8 **Renewables reaching grid parity** – Once dismissed as too expensive to be competitive, wind and solar—especially utility-scale—are reaching grid parity and often pricing out more traditional generation resources. In fact, the Department of Energy estimates that wind could be the nation's single greatest source of energy by 2050, comprising up to 35 percent of the fuel mix.

7 **Utilities face growing load defection** – With the rapid proliferation of rooftop solar, some customers are bypassing their local utility for their electricity needs, especially in a few markets such as Hawaii and California. Customers combining load management strategies with rooftop solar installations could purchase less power from their utility, and may even cut the cord altogether.

6 **Utilities getting in on the solar game** – A number of utilities are responding to load defection and consumer demand for clean energy by expanding into the solar industry, both in the utility-scale and rooftop markets. Community shared solar, which allows customers without suitable rooftops for solar to buy a few modules on a larger array, grew exponentially between 2014 and 2016.

5 **Debates over rate design reforms and value of distributed energy resources (DERs) are heating up** – Altering rate designs to properly value distributed resources is a trend that has largely grown out of retail net metering. This pays utility customers with solar the retail rate for the electricity they send back to the grid.

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4 **Utilities are modernizing the grid** – Adding new utility-scale and distributed renewable capacity has increased the need for utilities to upgrade and modernize their transmission and distribution grids. Many of the regulatory initiatives underway to help determine the value of DERs also order their state's utilities to prepare their distribution grids for increased penetrations of distributed resources.

3 **Utilities buying into storage** – Few technologies hold as much promise as energy storage for utilities looking to optimize their distribution grids and integrate more renewables. While the price for battery storage is still too high to make projects economical in regions with relatively inexpensive electricity, costs are coming down quickly.

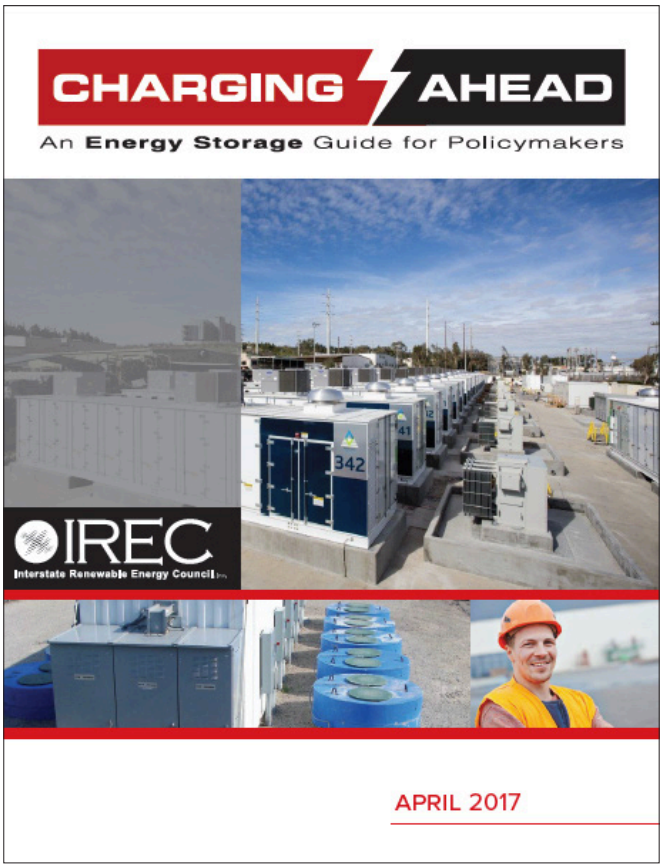
2 **Utilities becoming more customer-centric** – Power companies used to think of their consumers simply as ratepayers, or even just "load," but new home energy technologies and shifting customer expectations are pushing them to focus on individual consumers. Increasingly, utilities are seeing it in their best interests to market themselves to customers as "trusted energy advisors" of sorts.

1 **Utility business models are changing** – The common thread running through these trends is that they all are changing the way electric utilities have traditionally done business. Where utilities were once regulated monopolies, the growth of distributed resources is forcing them to rethink their business models. California and New York have captured most of the headlines for redefining the utilities' role on the distribution grid, but other states have initiated their own dockets to transform business models.

It is likely that your utility has had to think about at least a few of these issues and may be grappling with more of them before long. Energy Services is here to help our customers manage these challenges and more. Contact your Energy Services representative to discuss how to turn transformation into your greatest opportunity. ■

IREC releases energy storage guide for policymakers

A new tool published by the Interstate Renewable Energy Council, *Charging Ahead: An Energy Storage Guide for State Policymakers* provides regulators and other decision makers with specific guidance on key issues for policy consideration, including foundational policies for advanced energy storage—a new generation of technologies characterized by flexible operating capabilities and diverse applications.



The characteristics that make energy storage so valuable and attractive also make it challenging to address in policy and regulatory contexts.

Despite its game-changing potential to transform the electricity system, energy storage is vastly underutilized in the U.S. electricity sector. Its deployment remains hampered by the current features of regional, state and federal regulatory frameworks, traditional utility planning and decision-making paradigms, electricity markets and aspects of the technology itself.

To date, state policymakers and electric system stakeholders have largely navigated energy storage issues without the benefit of a roadmap to inform key regulatory and policy pathways for widespread deployment.

Charging Ahead aims to address that gap by providing an in-depth discussion of the most urgent actions to take in order to enable viable energy storage markets that effectively empower states to take advantage of the full suite of advanced energy storage capabilities. The guide identifies four foundational policy actions states should consider taking:

1. Clarify how energy storage systems are classified to enable shared ownership and operation functions in restructured markets
2. Require proactive consideration of energy storage in utility planning effort
3. Create mechanisms to capture the full value stream of storage services
4. Ensure fair, streamlined and cost-effective grid access for energy storage system

In addition to these foundational policies, the report provides background on energy storage applications, analyzes regulatory actions states are currently taking, and also puts some context around the valuation of energy storage. Read more.

A free webinar on April 26 will look at how the report can equip regulators and other stakeholders to integrate energy storage technologies onto the grid. Recommended state policy actions to address energy storage barriers will also be discussed. ■

Utility industry survey identifies top concerns in 2017

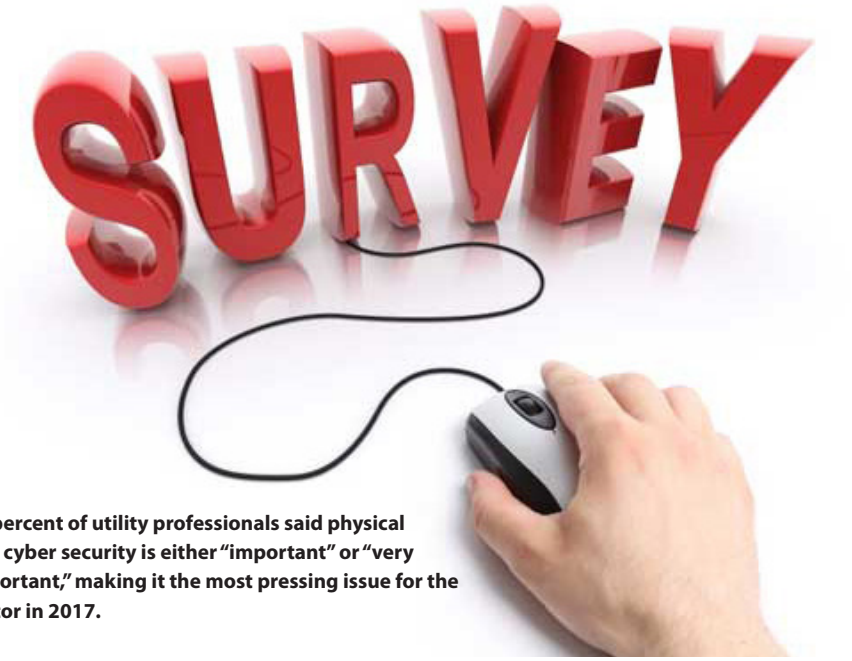
The results are in from Utility Dive's State of the Electric Utility Survey 2017 and the report is available to download.

The top five issues utilities identified as their biggest challenges will no doubt sound familiar to WAPA customers, whether or not they participated in the survey:

- Physical and cyber security
- Distributed energy policy
- Rate design reform
- Aging grid infrastructure
- Reliable integration of renewables and distributed energy resources (DERs)

The results of the survey, disclosed in late March, found that 72 percent of respondents see physical and cyber security as either "important" or "very important" today, making it the industry's most pressing issue in 2017. A total of 65 percent considered distributed resource policy either important or very important. Rate design reform ranked as important for 31 percent and very important for 32 percent of respondents. As for aging grid infrastructure, 34 percent of survey respondents see it as important today, while another 28 percent say it is very important. The reliable integration of renewables and DERs finished in the top five with 60 percent identifying it as an important or very important concern.

State regulatory model reform, the aging utility workforce, changing consumer preferences, compliance with state power mandates and stagnant load growth rounded out the top ten issue responses.



72 percent of utility professionals said physical and cyber security is either "important" or "very important," making it the most pressing issue for the sector in 2017.

Two years ago, physical and cyber security ranked as sixth, behind aging infrastructure, aging workforce, current regulatory models, stagnant load growth and federal emissions standards.

More than 600 electric utility employees from the U.S. and Canada took online questionnaire, offered to Utility Dive readers in January. Investor-owned utilities represented 54 percent of the survey respondents, followed by municipal or public power utilities (32 percent) and electric cooperatives (14 percent).

Among other key takeaways in the 2017 report, the survey found that utilities are most confident in the growth of utility-scale solar, distributed energy resources, wind energy and natural gas generation over the next 10 years. They also expect coal generation to decline significantly, while nuclear generation will stagnate or retire, depending on the region. Utilities consider uncertainty over future energy policies and market conditions to be the most significant challenge associated with the changing power mix, according to the survey.

Region played a role in how utilities viewed challenges. The majority of respondents across the country identified physical and cyber security, DER policy and renewable energy and DER integration as serious issues. However, that concern was markedly stronger in the West Coast, Great Plains, Rocky Mountain and New England regions. Utility Dive noted that those regions feature states with both robust DER growth and utility reform dockets to reshape power sector business models for DER deployment.

Rate design reform and aging infrastructure were of greater concern on the West Coast, while utilities in the Southwest and South Central states were the least worried about those issues.

You can download the report for free and see how your responses stack up to those of your colleagues. Then, share your thoughts on these issues with Energy Services, let us know how you are handling them and how you would like us to help you address them. ■

Earn energy-efficiency certificate at APPA Spring Institute

A well designed and implemented energy-efficiency program can contribute to a utility's load management goals and to greater customer satisfaction. But success doesn't happen by accident—program managers must understand the industry, marketplace, customers and many other factors.

The American Public Power Association (APPA) offers an Energy Efficiency Management Certificate Program at its Spring Institute, taking place May 15-19 in Minneapolis, Minnesota. The program covers all aspects of energy-efficiency portfolio and program planning, implementation and evaluation. Attendees will be prepared to help residential, commercial and industrial customers save energy, while enjoying high reliability and quality service.

The classes are designed by instructors who have decades of industry experience and understand the specific needs of public power utilities. Topics include:

- Electric Utility Industry Overview: Strategic Challenges & Trends – Monday, May 15
- Introduction to Energy Efficiency Programs & Technologies – Tuesday, May 16
- Energy Efficiency Goal-Setting and Strategy Development – Wednesday, May 17
- Energy Efficiency Program Design and Implementation – Thursday, May 18
- Measurement, Evaluation, and Data Systems for Energy Efficiency Programs – Friday, May 19

The Institute format also provides an excellent opportunity to network with industry peers.

Small, medium and large public power utilities will benefit from the courses, whether they are just starting an energy-efficiency program or scaling up an existing offering. Participants can take the five courses together to earn a professional credential or individually to brush up on various aspects of energy efficiency or earn a professional credential.

To earn an Energy Efficiency Management Certificate, participants must complete the five required courses, pass an online exam and submit an energy-efficiency program business plan within a year of taking the classes.

APPA's seasonal education institutes offer in-depth training courses for all skill levels. Institutes allow attendees to focus on a single topic or spend the week in multiple classes for more comprehensive training.

Registration discounts are available for all five courses or for two or more individual courses. There is an additional early-bird discount for registering before April 24. Learn more. ■

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Editor: **Kevon Storie** Designer: **Grant Kuhn**