

BULLETIN

The energy and planning resource for Western utilities

DECADES OF PLANNING LEAD TO END OF COAL FOR SILICON VALLEY POWER

A utility that prides itself on a diverse power supply will soon be removing one particular resource from its portfolio for good. Silicon Valley Power (SVP), the municipal electric utility serving Santa Clara, California, will become coal-free after Dec. 31, 2017, when it ends electricity imports from the San Juan Generating Station.

The Federal Energy Regulatory Commission issued its final approval of the move on Dec. 30, 2015. Cleaner energy from renewable and natural gas resources will replace the power from the New Mexico coal-fired power plant for 53,000 Santa Clara customers. The confluence of many different policies and pressures led to this decision, observed Larry Owens, SVP manager of customer services. "But mostly, it is because our customers want us to reduce greenhouse gas (GHG) emissions," he said.

Currently, about 36 percent of the utility's power comes from state-man-



The state-of-the-art Lodi Energy Center replaces coal-fired megawatts with cleaner-burning natural gas and fast ramping capabilities that complement renewable generation. (Photo copyright: www.siemens.com/presse)

dated renewable resources, exceeding California's 33-percent-by-2020 requirement. With large hydro included, more than 50 percent of the power the utility supplies is carbon-free, even as SVP maintains some of the lowest electricity rates in the state.

Changing times, concerns

The commitment to affordable, reliable electricity made coal power a sensible choice in 1980, when SVP partnered with Modesto Irrigation District and Redding Electric to form the M-S-R Public Power Agency. The joint power authority purchased an interest in the San Juan Generating Station in 1983 to supplement seasonal hydroelectric generation and reduce

the need to buy expensive and often cost-volatile short-term power.

Over the years, however, concerns grew about the effect of carbon emissions on the environment, and in 2006, California passed the Global Warming Solutions Act, Assembly Bill (AB) 32. In keeping with its history of environmental responsibility, Santa Clara launched its own strategy to fight climate change, starting with an inventory of all community emissions. Cataloging the city's sources of emissions gave Santa Clara a good baseline to work with and aligned with the reporting requirements that preceded the carbon cap-and-trade market AB 32 established, starting in 2013, noted Owens.

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One thing the inventory revealed was that although coal-fired power provided just 10 percent of SVP's electricity, it accounted for 50 percent of the utility's carbon emissions. Cleaning up those emissions and complying with other new environmental regulations covering all emissions promised to increase the costs and liabilities associated with the plant.

SVP, through M-S-R Public Power Agency, began confidential negotiations in 2011 to pull Santa Clara out of the San Juan contract, and started to examine alternatives to coal-powered resources. "Replacing 10 percent of our generation to get rid of 50 percent of our emissions just made good sense," said Owens.

Many parts to lower emissions puzzle

Making the decision was the only easy part, though. SVP was still a part owner in the plant and was still paying on the bond that financed that purchase. The utility could have sold its interest to another power provider, but that would just be passing the climate-change buck, Owens explained. "When the opportunity came up to affect a true reduction in emissions by working toward the closure



These new wind turbines at Intel's headquarters in Santa Clara add to the 1 MW of onsite solar. Intel Corp is the leading user of renewable energy nation-wide. (Photo by Intel Corp.)

of two of the four units, we got behind it immediately," he said.

Accomplishing that goal involved working with multitude of partners and interests, not only several utilities besides M-S-R, but also coal producers, the local economy, regional, state and federal agencies, environmental groups and other vested interests. "It was a lot of hard work," Owens recalled. "All of the parties in that complicated effort deserve recognition for honoring everyone's interest and still attaining the goal."

Replacing 51 megawatts (MW) of electricity from the San Juan plant has proven to be as much an opportunity for SVP as a challenge. The utility became a major partner in the Lodi Energy Center (LEC), a state-of-the-art natural gas plant, and has received electricity from it since 2012. The combined-cycle LEC incorporates cutting-edge, "fast-start" technology to reach full load in 30 minutes. The ability to quickly ramp up reduces startup emissions and makes the system complementary to intermittent renewable resources.

Small hydropower plants present yet another opportunity for SVP to acquire new renewables. "We have two new facilities on deck ready to produce 32 MW," Owens said. "Some of the hydropower we have picked up in the past few years was from expir-

ing contracts with PG&E, but we are starting to see more projects that add capacity to existing facilities."

These new wind turbines at Intel's headquarters in Santa Clara add to the 1 MW of onsite solar. Intel Corp., an SVP customer, is the leading user of renewable energy nation-wide. (Photo by Intel Corp.)

Keeping customers satisfied

Ending its exports of coal-generated electricity in 2018 will reduce the carbon footprint of SVP's generation by 50 percent, two years ahead of the 2020 deadline in Santa Clara's Climate Action Plan. That won't be the end of the utility's efforts to maintain a sustainable and affordable power supply.

Part of the motivation is staying ahead of state and federal environmental and renewable mandates, but most of it comes from the customer. "For one thing, our service territory includes some of the world's high-tech giants," Owens said. "Many of those large commercial customers have advanced their own sustainability initiatives and they expect their utility to keep up."

For Silicon Valley Power, it all comes down to meeting and exceeding its customers' expectations. "I can't overstate how big a part our customers' interests played in driving toward a coal-free portfolio," Owens stated. ⚡

ENERGY SERVICES BULLETIN

The Energy Services Bulletin is published by Western Area Power Administration for its power customers. The mailing address is Western Area Power Administration, P.O. Box 281213, Lakewood, CO 80228-8213; telephone (720) 962-7508.

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LINCOLN ELECTRIC SYSTEM KEEPS REFINING EFFICIENCY INCENTIVES

Like rose bushes, customer energy-efficiency programs only flourish with careful attention, like Lincoln Electric System (LES) gives to its Sustainable Energy Program.

The Nebraska municipal utility is funding its incentive program with \$3 million this year to help customers make their homes and businesses more energy-efficient. The program is intended to encourage customer-owners to upgrade to equipment and systems that are more efficient than they would have purchased on their own.

Program participants are not the only LES customers who benefit, either. “The Sustainable Energy Program also reduces the need to purchase more expensive power during the summer months and delays the need for new power generation,” said Marc Shkolnick, LES manager of energy services. “This is a good investment for all our customer-owners.”

Broadening program

LES launched the Sustainable Energy Program in 2009 to reduce demand with energy efficiency and renewable energy to offset the utility’s projected five-year growth on a rolling basis. “We retooled a heat pump incentive to go after our summer peak,” explained Shkolnick. “Over time, we added more equipment and systems as we realized that it would take a more aggressive approach to ensure that all our customers were benefitting.”

The current version of the Sustainable Energy Program offers incentives for:

- High-efficiency heat pumps and air conditioners for residential and commercial customers replacing existing cooling systems or installing them in newly built homes and buildings
- Commercial and industrial energy-efficiency measures



LES offers funds to help customer-members upgrade insulation and seal their homes and businesses. (Photo by Lincoln Electric System)

that achieve peak demand savings, such as commercial lighting retrofits, air conditioner or heat pump replacements, variable-frequency drive upgrades, compressed air system analysis and upgrade, energy management system installation, optimization or upgrade and system commissioning

- Whole-house and facility sealing and insulation to seal penetrations and bring insulation levels to current code standards in existing homes and facilities

Air conditioner and heat pump upgrades are the most popular residential measures, and for commercial customers, “It’s lighting, by a slam dunk,” declared Shkolnick. “Over time, between the changes in technology and dropping prices, we’ve seen the most activity in lighting incentives.”

Spreading savings, awareness

Since 2009, residential customers have implemented 6,000 projects and commercial customers have completed

5,000 upgrades to save a cumulative estimate of 100,000 megawatt-hours. Leveraging \$18.3 million in incentives, LES customers invested \$87 million in energy-efficiency upgrades for an estimated annual savings of \$7 million on electric energy bills, a win for the local economy, too.

In fact, trade allies have been among the program’s biggest promoters, noted Shkolnick. “People don’t think about these kinds of purchases until they need to. Contractors are talking to customers when they are ready to buy new equipment or systems, and they talk about the incentives,” he said. “LES promotes the program through the usual channels—bill stuffers, newsletters, ads—but the vendors are our most effective marketers.”

Getting off on the right foot with the local contractor pool—and staying there—helped. LES brought vendors in during the development of the Sustainable Energy Program to get their input. “We still do an annual

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orientation to update our trade allies on program changes, terms and conditions,” Shkolnick said. “Also, we moved the reimbursement system online to streamline the process and make it more user-friendly.”

Reaching out to contractors has paid off in more than program participation. A recent survey LES conducted showed not only a growing awareness among customer-owners about the Sustainable Energy Program, but also about energy use and reducing waste in general.

Making good even better

All of which is to say that the Sustainable Energy Program is doing a good job of saving energy and engaging customers. But is it keeping up with the times? Since LES launched the program, lighting technology has made great strides, building energy codes have tightened and federal efficiency standards have toughened.

Far from taking success for granted, LES recently hired a consultant to analyze seven years’ worth of data and experience. The third-party critique

will review the program’s cost-effectiveness, and look at assumptions for claiming energy and demand savings and how the savings are modeled in the utility’s load forecast. “We want to make sure the program is following industry best practices,” said Shkolnick.

It takes work to build an effective energy-efficiency program—one that meets the needs of both customers and utility—and Lincoln Electric System is sowing what it wants to reap.



LES commercial customers overwhelmingly choose lighting upgrades to reduce their electricity bills. (Photo by Lincoln Electric System)



AROUND THE WEB

DOE BETTER BUILDINGS INITIATIVE

Improving the efficiency of America's building stock would save billions of dollars in energy costs, reduce greenhouse gas emissions and create thousands of jobs. To capture – and replicate – those positive gains in energy efficiency, the Department of Energy launched the Better Buildings Initiative, a partnership of public and private sector organizations across the country.

The initiative focuses its strategies within four interrelated key areas to drive change and investment in energy efficiency:

- Developing innovative, replicable solutions with market leaders
- Making energy efficiency investment easier
- Developing a skilled clean energy workforce
- Leading by example in federal government

Many ways to build better

Building owners in the commercial, educational, industrial, residential and state and local government sectors can get involved in the initiative through a variety of pathways:

- The cornerstone Better Building Challenge calls on the leadership of companies, universities, school districts, housing developers and state and local government to commit to reducing the energy used across their building portfolios by 20 percent or more over 10 years.
- The Better Building Accelerators demonstrate specific innovative policies and approaches, which upon successful demonstration, will accelerate investment in energy efficiency.

- The Better Buildings Summit, May 9-11 in Washington, D.C., brings partners together to showcase solutions and exchange best practices.
- The Better Buildings Alliance connects members in different market sectors with DOE's research and technical experts to develop and deploy innovative, cost-effective, energy-saving solutions that lead to better technologies, more profitable businesses and healthier, more comfortable facilities.
- The Better Buildings Workforce Guidelines provide a national platform for developing high-quality, nationally recognized training and certification programs that are consistent and scalable across the energy-efficiency industry.
- The annual Better Buildings Case Competition engages the next generation of engineers, entrepreneurs and policymakers to develop creative solutions to real-world energy efficiency barriers for businesses and other organizations across the marketplace. After taking a year off for planning, the competition is back in 2016.

Partner-specific resources

Industrial partners can participate in the Better Plants program that has saved about 457 trillion British thermal units and \$2.4 billion cumulatively in energy costs to date. Facilities may also pursue Superior Energy Performance Certification, by implementing an energy management system that meets the ISO 50001 Standard and demonstrates improved energy performance.



Resources dedicated to residential partners include the online Solution Center, Home Energy Score and the Zero-energy Ready Home designation to promote high-performance housing. Utility residential program managers will find many tools in these pages to help homeowners control their energy use.

The Better Building Residential Network is available to state and local government partners, as well as residential partners. The membership, which includes utilities, analyzes energy-efficiency programs and shares best practices with the goal of increasing the number of energy-efficient homes. Join their weekly peer exchange calls to discuss such topics as smart homes, the power of messaging, emerging trends in residential efficiency and residential property-assessed clean energy financing.

Get involved

Buildings use close to half of the energy consumed in the United States, so a more efficient building stock can help utilities meet environmental regulations and load management goals. Learn more about becoming a Better Building Partner or sign up for interactive webinars that explore cost-effective ways to integrate energy savings into their daily building operations. Keep up to date on the latest partner activities and solutions by signing up for Better Buildings communications. ⚡

ENERGY DEPARTMENT ISSUES LARGEST ENERGY-EFFICIENCY STANDARD EVER

That boom you may have heard at the end of 2015 was the Department of Energy Appliance and Equipment Standards Program sending the year out with historic new efficiency standards for commercial air conditioners and furnaces. The new standards are expected to save 1.7 trillion kilowatt-hours over 30 years of sales, or almost as much energy as one year's worth of coal generation in the United States.

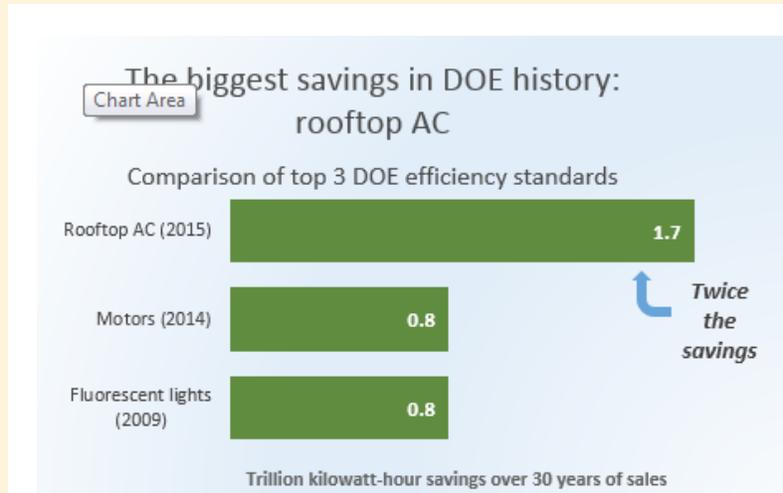
Tons of savings

Rooftop air conditioners cool about half the commercial floor space in the nation. The DOE also set standards for commercial warm air furnaces, which are typically installed with the rooftop commercial air conditioners. Over the lifetime of the products, the standards will save businesses \$167 billion on their utility bills and reduce carbon pollution by 885 million metric tons.

According to DOE estimates, the new rooftop air conditioner standards will save more energy and cut more emissions than any other standards completed by the agency. The previous record-setters were the 2014 standards that covered electric motors and the 2009 fluorescent tube lamp standards.

Takes teamwork

Representatives of individual manufacturers, installers, utilities, environmental groups and efficiency organizations actively contributed to the development of the standards. The American



(Graph by Appliance Standards Awareness Project)

Council for an Energy-Efficient Economy, the Appliance Standards Awareness Project (ASAP) and the National Resource Defense Council were among the 17 stakeholder groups participating in the Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC).

ASRAC uses negotiated rule-making to engage all interested parties, gather data and attempt to reach consensus on establishing energy-efficiency standards. The proof of the process is in the savings—about 5 billion metric tons of emissions in 2014—and in the support for its work. In an interview with UtilityDive, Marianne DiMascio of ASAP observed that the work of the committee often goes unnoticed because it is largely uncontroversial—a rare thing for a government agency in today's political climate. "It doesn't

always make for exciting news to say there's a policy that many people agree with, that is having a huge impact, and it's about the type of motor your air conditioner uses [or the amount of insulation on a water heater]," she said.

Phasing in

These new commercial air conditioning and furnace standards will occur in two phases. The first phase will begin in 2018 and will deliver a 13-percent efficiency improvement in products. Five years later, an additional 15-percent increase in efficiency is required for new commercial units.

Visit the DOE website to learn more about the energy-efficiency standards for commercial air conditioners and warm air furnaces. ⚡

TRIBAL RENEWABLE ENERGY WEBINAR SERIES SCHEDULE ANNOUNCED FOR 2016

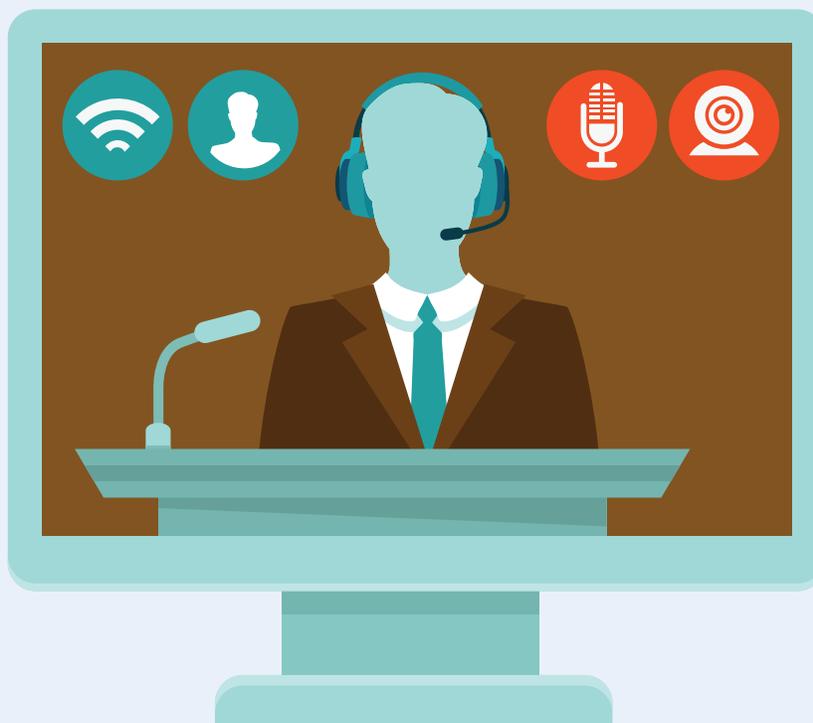
A new year brings a new schedule for the Tribal Renewable Energy Webinar series sponsored by the Department of Energy (DOE) Office of Indian Energy Policy and Programs and Western's Renewable Resource Program.

Now in its fourth year, the popular series continues to provide tribal leaders and staff with tools and resources to develop and implement tribal energy plans, programs and projects.

Tribal case histories are playing an increasing role in the webinar series, providing real-life examples and experience to illustrate the topics. "The 2016 webinar series continues to build upon the fundamentals of strategic energy planning, a necessary cornerstone to successful tribal renewable energy projects," said Randy Manion, Western's Renewable Resource Program manager. "We now incorporate tribal renewable project successes and experiences into almost every webinar, along with useful tools and resources."

Webinars also highlight how clean energy development can enhance the local economy and help tribes move toward energy independence.

As in previous years, topics cover the entire process, from developing an energy plan to financing projects to obtaining transmission and more. Industry experts will discuss power marketing, energy policy and regulatory issues, project business models and economic development opportunities.



- Jan. 27 – Energy Planning for Tribal Economic Development
 - Feb. 24 – Exploring Your Energy Markets
 - March 30 – Transmission and Grid Basics for Tribal Economic and Energy Development
 - April 27 – Understanding the Energy Policy and Regulatory Environment
 - May 25 – Tribal Business Structures for Financing Projects
 - June 29 – The Life Cycle of Tribal Clean Energy
 - July 27 – Project Development for Long-Term Tribal Energy
 - Aug. 31 – Project Regulatory Considerations
 - Sept. 28 – Strategic Partnerships for Clean Energy and Economic Development
 - Oct. 26 – Accessing Capital for Tribal Energy and Economic Development
 - Nov. 30 – Energy and Economic Success Studies
- Webinars are held from 11 a.m. to 12:30 p.m. Mountain Time, usually on the last Wednesday of the month. There is no charge to attend, but registration is required. Attendees need to have Internet access, a computer and a phone line. If you are unable to participate in the live event, the webinar is recorded and posted in the Renewable Resources webinar library. ⚡

INTRODUCING IREC'S UPDATED SOLAR CAREER MAP

IREC's Solar Career Map – new resource for training providers

Jan. 14, 12-1 p.m. MST

Update: This webinar is over, but visit YouTube for an overview of the Solar Career Map.

Join the Interstate Renewable Energy Council (IREC) on Jan. 14 for a free webinar on the Solar Career Map, a comprehensive resource covering solar energy occupations.

IREC recently updated this interactive tool to demonstrate the breadth of the industry and its critical occupations, and to highlight the necessity of integrating solar training in related fields. The map describes diverse jobs

across the industry and identifies the sorts of experience and credentials necessary to do them well.

Utilities with solar programs understand the importance—and the challenge—of building and maintaining a high-quality contractor pool for installing and servicing customer solar systems. This complimentary IREC webinar offers utility program managers an opportunity to connect with clean energy trainers and others involved in workforce development.

Attendees will learn how to:

- Access the map's interactive features, including 40 jobs in four sectors how they are related
- Apply ideas about how you can leverage the map to make your work more effective
- Find resources created by IREC and the Solar Instructor Training Network You are leaving Western's site. for community colleges and other solar training providers

The IREC team will answer your questions submitted in advance or during the webinar as time allows. ⚡

