

Western's monthly energy efficiency and renewable energy newsletter dedicated to customer activities and sharing information on energy services.

## Rewards program sweetens deal for consumers, businesses buying green tags

**W**hile virtue may be its own reward, it is still nice to get a financial benefit for it. In Palo Alto, Calif., residents who appreciate a little incentive to be more sustainable may find it by joining the PaloAltoGreen Team. Members of the Team on average reduce emissions by approximately 9,500 pounds a year—the amount of electricity-related emissions produced by the average Palo Alto household.

City of Palo Alto Utilities (CPAU) customers become Team members by enrolling in PaloAltoGreen, the municipal utility's voluntary green power program. Buying clean energy in the form of renewable energy certificates for 1.5 cents more per kilowatt-hour lets residential and commercial customers offset their carbon footprint and support renewables development. Those reasons alone have persuaded more than 20 percent of CPAU's customers to enroll in PaloAltoGreen since the program debuted in 2003.

Customers who subscribe to PaloAltoGreen also get a Green Team card. This card gives residents incentives to patronize local businesses which are also PaloAltoGreen members. "We wanted to offer additional benefits to customers to thank them for supporting clean energy," said PaloAltoGreen Program Manager Andrea Hart.

### How it works

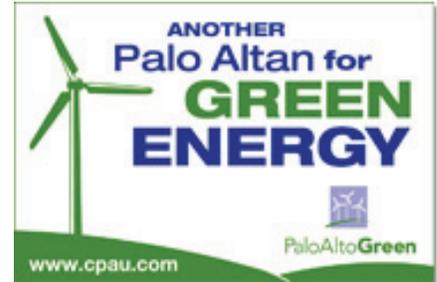
The PaloAltoGreen Team discount program works for both residential and commercial customers. It also encourages city residents to patronize local businesses.

Each household that enrolls in the green power program receives one PaloAltoGreen Team Card and two key fobs. Card holders get discounts on their purchases when they present these cards to businesses displaying the PaloAltoGreen Team decal in their window, on the door or at the register.

Commercial customers who participate in PaloAltoGreen can join the Team at no extra cost. Businesses can choose to offer a percentage discount or another type of special offer to PaloAltoGreen Team members, who present their card at the time of purchase.

### Spreading the word

CPAU lists Team member businesses on its website, and



**CPAU customers who subscribe to the utility's voluntary green power program get a sign like this for their yards or windows. (Artwork by City of Palo Alto Utilities)**

publishes offers in its quarterly electronic PaloAltoGreen newsletter, on its website and on PaloAltoGreen's Facebook page.

Promoting discounts electronically has allowed Team businesses to change their specials or push a product seasonally, noted Hart. "We found that businesses were more comfortable with the program when they had the flexibility to pick their discount or alter the offer easily," she said. "Some offers have been a little too successful, while others don't go over as well. PaloAltoGreen has given our commercial customers a way to experiment with their own promotions."

The program also gives consumers a way to support local businesses that share their commitment to the environment. In return, the businesses get a new avenue to reach the more than 6,000 households that subscribe to PaloAltoGreen. On top of that, the city itself benefits because, as Hart

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# Solar arrays move Fowler, Colo., closer to sustainability goals

**F**owler, Colo., the little town with the big green plans, took another step away from the grid and toward its ultimate goal of a revitalized and sustainable community with the unveiling of 137 kilowatts of solar power on Nov. 18.

The celebration began with an assembly at Fowler Elementary School and moved to the town's old Park School. The ground-mounted, 13.8-kW array on the school's former playground is one of seven being built at municipal facilities around town. Installed by Denver-based Vibrant Solar, the solar panels are expected to save the town a minimum of \$7,500 annually in energy costs.

The crowd applauded as outgoing Gov. Bill Ritter and Town Administrator Wayne Snider snipped the ribbon draped across the panels. Students, residents, clean-energy professionals and advocates, reporters and state and city officials pressed forward to inspect the new addition to Fowler's power supply. "It's unbelievable, this kind of turnout," Snider said.



**The town of Fowler first introduced solar energy into the community by replacing the streetlights in the town park with solar-powered streetlights.**

## Building a future

Fowler's enthusiasm for sustainability was a strong factor in being chosen, along with Rifle, Monte Vista and the Five Points neighborhood in Denver, to participate in the Colorado Sustainable Main Streets Initiative. "We chose communities around Colorado, many of which had already started doing things which are really about how you ensure a quality of life for all the people of the place," Gov. Ritter said. "Fowler's leaders have vision. They are thinking about the future—not just tomorrow, but 10, 20, even 30 years ahead."

The initiative, launched in April, has contributed about \$500,000 to Fowler's revitalization efforts. In addition to the solar arrays, projects include enhancing traffic flow at a major downtown intersection, rebuilding sidewalks and renovating downtown buildings. One of those buildings, an old movie theater, will be used for school productions, and may be retrofitted with solar panels and a geothermal heat pump.

All the projects and plans have made an impression on the children of

Fowler, who show a clear understanding of sustainability that eludes many adults. Snider noted that he was most proud of his work with the students, "Especially the sixth-graders," he said. "They ask questions I can't answer."

One sixth-grader, Mitchell Fosdick, took it upon himself last spring to survey other school kids about what the town needs for walkability. He was concerned that there was no sidewalk on one of the streets he walked to visit his grandmother. His survey findings played a role in making sidewalk repair a priority in the city's sustainability plans.

## Economic development

As Gov. Ritter pointed out, the residents of Fowler are working hard to make their town a great place for their kids to live. Once they reach adulthood, however, they will need jobs if they are to stay in their hometown. Green power may provide those, too.

Ben Jones, CEO of Vibrant's sister company, Helios Solar LCC, attended the festivities and told reporters there that he hoped to be spending a lot more time in Fowler over the next

*See SOLAR ARRAYS, page 3*

## Energy Services Bulletin

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## Solar arrays *from page 2*

few months. “Helios Solar is trying to build the next generation of solar power, and we are seriously considering Fowler for the location for our lead manufacturing facility,” he said.

The crowd cheered when Jones spoke of bringing clean energy jobs to the area. “I’m hoping to make an official announcement in the next few weeks,” he said. “We can all work together and really make this happen.”

### Learning, sharing

There are many details to work out before Helios can move to Fowler, but the town has overcome obstacles before.

Even building solar arrays to capture the region’s abundant sunshine was not a given. Speaking at the ribbon cutting, Robert Quist, Vibrant’s director of sales and manager of the Fowler project, said that he didn’t think the idea would work when Snider first proposed it. “A project like this one is always the wrong size: too small to attract the kind of institutional money that typically entices utility-



**The Valley View Theatre, Fowler’s former movie theater, will be renovated and repurposed as a performing arts center for the high school drama class.**

scale solar, but too large and complicated for all but the most visionary small investors,” Quist explained.

But persistence paid off when the project eventually found an investor, J.A. Solar, to fund the installation and lease the power back to Fowler. In the process, Vibrant learned much that can be applied to other solar projects, said Quist.

There is a lot that other communities can learn from the town of Fowler, and not just about renewable energy and sustainability. The most important lesson, so far, may be about the willingness to start the journey toward the future. “And we are not finished yet,” said Snider. ⚡

**Want to know more?**

**Visit [www.wapa.gov/es/pubs/esb/2011/jan/jan12.htm](http://www.wapa.gov/es/pubs/esb/2011/jan/jan12.htm)**

## Rewards program

*from page 1*

put it, “The program keeps Palo Alto shoppers in Palo Alto. It helps to build our sense of community,” she added.

### And it’s popular!

Clearly, the community has embraced PaloAltoGreen—the

program has scored first in customer participation five years in a row in the National Renewable Energy Laboratory’s ranking of utility voluntary green power programs. The city also currently holds eighth place in EPA’s Green Power Community Challenge. The city of Palo Alto has received recognition for the success of PaloAltoGreen

from the Department of Energy and Environmental Protection Agency, not to mention favorable press.

Popularity may be only an indirect benefit of green power, but most utilities will admit that the community’s and consumers’ good will is an invaluable resource. Maybe that is virtue’s real reward. ⚡

**Want to know more?**

**Visit [www.wapa.gov/es/pubs/esb/2011/jan/jan11.htm](http://www.wapa.gov/es/pubs/esb/2011/jan/jan11.htm)**

# Many reasons to buy RECs, no reason to wait

**T**his is one of those times when it seems that the universe has lined up all circumstances to send a single message, and that message is, “Time to buy renewable energy certificates (RECs).”

Also known as “green tags,” RECs are the environmental attributes of renewable generation sold separately from the generation itself. Marketing the attributes separately enables developers to recoup the additional cost of renewable development. It also gives consumers the chance to support green power technologies even when they cannot receive the power directly. As with any product, the timing of your purchase can make all the difference in your satisfaction. Here are some reasons you should consider investing in RECs now.

## Be a Green winner

The Environmental Protection Agency’s Green Power Partnership launched the Green Power Community Challenge in September. The goal of this yearlong national competition is to double the collective amount of green power used by Green Power Communities. Participating communities will compete to see which one can achieve the highest green power percentage of total electricity use and which one can use the most green power. Winners will be declared in September 2011.

Several communities in Western’s territory have a shot at the championship. In the Green Power Partnership’s latest rankings, Santa Clara, Calif., held the second place honors, with the city of Palo Alto, Calif., in seventh place and Durango, Colo., 15th out of 30 communities. All of these contenders use RECs in their voluntary green

power programs.

While the Green Power Community Challenge is for municipalities, electric cooperatives can use the competition to build their relationships with the communities they serve. Santa Clara could not be a front runner without the support of Silicon Valley Power, and La Plata Electric Association’s Green Power Program has certainly contributed to Durango’s success. Offering RECs to communities in your service territory is an easy and affordable way to help them to reach their sustainability goals.

## It’s bargain time

Due to a slow economy, an abundance of wind generation and a number of other factors, REC prices are at an all-time low. This may not be the best of times for wind farm developers, but it’s a great window of opportunity for utilities to establish a green pricing program while helping to build demand for renewable energy. If your utility hasn’t set up a voluntary green power program because of budgetary constraints, call a third-party REC marketer today to find out what’s available. Third parties provide supply and marketing expertise, and can take on the risk of these volatile markets.

Or, you could buy RECs from your friendly neighborhood Federal hydro-power marketer—that’s Western. The Upper Great Plains region is selling RECs from wind farms in the Dakotas, available now through 2012. “Western is offering an excellent price on a 100-percent renewable product,” Energy Services Representative Mike Radecki said. “Our customers will also get the advantage of Western’s extensive experience in REC purchases.”

Federal and non-Federal Western customers should contact Radecki for more information.

The decade-old “green tag” market offers utilities a proven product that meets all Green-e certification requirements. “Consumers like a menu of services, and a voluntary green pricing program is a popular, value-added service utilities can add to their customer service portfolios,” said Western Renewable Resources Program Manager Randy Manion. “Also, some third-party REC marketers are willing to assume most of the upfront cost and risk to setup a turn-key, customized voluntary green pricing program for a utility.”

## Just good business

Don’t be fooled into thinking that consumers have forgotten about renewable energy just because we are all pinching pennies right now. Arguably, the general public is more engaged and more informed about energy choices than it has ever been. According to National Renewable Energy Laboratory, in 2009, total retail sales of renewable energy in voluntary markets exceeded 30 million MWh, an increase of 17 percent from 2008.

Many people want to use their energy dollars to support the development of a greener economy. “Energy-savvy consumers are going to buy RECs somewhere,” Manion pointed out. “Their utilities can make it easy for them by offering a green power option, and get credit for great customer service, too.”

Mark James, DSM and renewable energy manager for Colorado Springs Utilities, offers another take on how

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*See NO REASON TO WAIT page 7*



### Question:

We have more than 100 buildings that are heated with a closed loop, geothermal heating system that includes cast iron radiators in each building. How can we treat the radiator surfaces to maximize energy efficiency of the system?

### Answer:

A little background will help you make more effective changes. There are two ways heat is transferred from the radiator to you and the room—radiation and convection. Convection is the air in the room heating up as it flows over and through the radiator. Radiation is heat transferred directly from the radiator surface to you and other surfaces of the room, without heating the air. For that reason, you may also save energy by rearranging the room, if possible, so that occupants and the radiator usually have a good “view” of each other.

Color and surface finish affect radiator performance by affecting how well heat is transferred by radiation. Color does not affect convection, provided the surface temperature is unchanged, which should be the case. How well a surface radiates is quantified by its emissivity. The higher the emissivity, the greater the heat transferred by radiation. See the table Total Emissivity from Various Surfaces for the emissivities for various coatings.

### Paint varies widely

Begin by choosing a flat paint and avoiding glossy finishes.

Definitely avoid metallic colors, such as aluminum or bronze.

Painting over an existing coat of white lacquer with flat black paint might improve efficiency by about 9 percent, compared to a flat white coat over the same surface. However, the wide variation in paint formulas makes it difficult to estimate with certainty how much one type of paint will save versus another. Savings to be gained from painting a radiator flat black range from as low as 1 percent to as much as 12 percent.

Paints of the same color will vary in their emissivity, depending on the specific product. For example, the table shows white coatings have emissivities ranging from about 0.77 to 0.95, while black coatings vary from about 0.80 to 0.98. Green and gray paints get only a single value in this table, but these emissivities vary, too, depending on the manufacturer’s recipe for their product.

The table shows that the ranges of emissivities of white and black paints overlap, so you can’t just assume that black paints radiate better than white paints. To get an accurate comparison, you would need manufacturer’s data for the specific paint products as applied to the material you are painting over. Without that information, which is often not available to consumers, it isn’t possible to say for certain if the black paint you bring home from the store will actually have a higher emissivity than a white paint.

Nevertheless, you can rely on some general tendencies. Glossy paints of all colors tend to have lower emissivities than flat paints. As a rule, metallic colors have lower emissivities than other colors. Flat black coatings will likely have somewhat higher emissivities than flat coatings of other colors—white, green, gray, etc.—but not necessarily.

### Beyond paint

Changing the painted surface of your radiator is only one way to improve its performance. Try some of these recommendations for more energy savings:

- Install thermostatic radiator valves on units with manual valves
- Provide a radiant panel on the wall behind the radiator (buy one or make your own by wrapping steel—not aluminum—foil over cardboard)
- Keep the radiator clean
- Add a radiator cover over the radiator to deflect the heat into the room instead of up the window
- Remove old coats of paint
- Add reflective insulation in walls behind the radiators if located on an exterior wall
- Bleed the radiators
- Add a booster fan under/behind radiator

People are generally more comfortable at a lower air tempera-

*See ENERGY EXPERTS page 8*

## Website of the month:

# Smart Grid Information Clearinghouse

Utilities grappling with questions about the smart grid now have a new go-to resource for keeping up with demonstration projects, case studies, standards, legislation and policy, best practices and more—Smart Grid Information Clearinghouse (SGIC).

Virginia Tech Advanced Research Institute in Arlington, Va., manages SGIC with assistance from the IEEE Power & Energy Society and EnerNex Corporation. The website is a portal to connect legislative and industry decision makers with the information needed to develop and deploy smart grid technology in an environmentally responsible way.

## Welcome to the gateway

The straightforward design of SGIC makes it an accessible gateway where users can begin their smart grid education or dive deeper into specific issues. The navigation bar at the top of the page organizes the information into broad categories:

- Smart Grid 101
- Smart Grid Projects
- Deployment Experience
- In-depth Information
- International
- My Smart Grid
- About SGIC

In the main content area are links to consumer FAQs, smart grid basics, a project map and technologies. These links take users directly into highly-sought after pages within navigation categories.

Below the “hot topic” buttons are links to smart grid event calendars and to content submission forms



where registered users can contribute project, product and program information. There is also a link to a subscription page to sign up for RSS feeds from SGIC. On the right side of the home page is a link to SmartGrid.gov and to relevant news stories.

## Learn the basics

Newcomers can start at Smart Grid 101, which offers one of the clearer definitions of the term, along with an explanation of how it works and a list of smart grid characteristics. There are also links to videos by DOE's National Energy Technology Laboratory and IEEE's Smart Grid project.

Users who want to see how the smart grid works within the electric power industry will be interested in the smart grid conceptual model. Created by the National Institute of Standards and Technology (NIST), this model identifies the smart grid players and how they interact to deliver power. NIST is developing a flexible, uniform and technology-neutral systems approach able to satisfy all the technology requirements for the smart grid.

Users can find the report on NIST's work, NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0, in the SGIC resource library.

This searchable database contains smart grid-related documents published by a group of trusted sources. Contributors include professional associations such as American Public Power Association and state and Federal agencies such as the Federal Energy Regulatory Commission, as well as electrical utilities.

Consumer Awareness resources are located in Smart Grid 101 to help professional stakeholders communicate with the general public. The section also provides that most valuable of resources, an acronym list.

## Smart grid in action

Many utility professionals have questions that are more practical than theoretical, such as, “Where are these smart grid projects, and how are they working in the field?” The answer to the first half of that question can be found in Smart Grid Projects. Users can find current projects either on the interactive map or on a searchable list. Both tools can filter projects by type and location. On the list page, there is also a menu of resources related to smart grid deployment.

Deployment experience provides answers to practical questions about performance, costs and benefits and

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## Website of the month *from page 6*

lessons learned. In this section, users will find tools, examples and practical discoveries made by pioneering utilities to build their business cases for smart grid investment and development.

The smart grid is very much

a work in progress with many issues still to be resolved. In-depth Information comprises resources to help users gain a better understanding of how these issues impact everyone from government to end-users. The topics covered include standards, technologies, cyber security, legislation and regulations and education and training.

Perhaps the most important

function the Smart Grid Information Clearinghouse serves is to give stakeholders a forum for communicating with each other locally, nationally and around the world. Users can register to share their experiences, too, and be a part of a conversation that will change how we deliver and use power. ⚡

**Want to know more?**

Visit [www.wapa.gov/es/pubs/esb/2011/jan/jan115.htm](http://www.wapa.gov/es/pubs/esb/2011/jan/jan115.htm)

## No reason to wait

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RECs can improve customer service. “Some people want their green power to come from local projects, while others are mainly interested supporting emerging renewable technologies, wherever the development is,” he said. “Using RECs in our program gives our customers that choice.”

A fringe benefit of green power programs—especially for public power providers—is that they give utilities another reason to engage customers. Manion added, “Anytime you are communicating with consumers about one of your products, it’s a chance to get their feedback about other areas of service. That’s priceless when it comes to building a relationship with your customers.”

Commercial customers—the segment that has really been driving the volume of green power

purchases—invest in RECs as a way to set themselves apart from the competition and meet corporate sustainability goals. EPA’s voluntary Green Power Partnership now has about 1,300 businesses and institutions participating. Some power providers, such as the City of Palo Alto Utilities, have developed programs to reward businesses for purchasing green power. In the process, the community gets a boost from dollars consumers spend to support local sustainable businesses.

### The right thing to do

Not all of the reasons for buying RECs now are about dollars and cents. Although it is difficult to measure, some research indicates that customers have greater satisfaction with utilities that offer green power programs, even if they don’t enroll in them.

Some of the reasons aren’t even about “now.” REC purchases can be part of a utility’s integrated resource

planning requirement, according to Western’s Energy Services Manager Ron Horstman. “As the economy recovers, a utility with a diversified portfolio is going to be in a better position to meet growing energy demands because they will have more options and be perceived by their ratepayers as the energy experts,” he said. “RECs can play an important role in planning for how to address carbon emissions, meet state renewable portfolio standards, and other regulatory requirements facing the industry.”

Renewable energy certificates can also be a part of the recovery by moving forward an industry that is good for the environment, national security and public health. And they are on sale now. Don’t wait to contact your Energy Services representative or a third-party marketer for more information about buying RECs. ⚡

**Want to know more?**

Visit [www.wapa.gov/es/pubs/esb/2011/jan/jan113.htm](http://www.wapa.gov/es/pubs/esb/2011/jan/jan113.htm)

## Energy experts

from page 5

ture if more heat is transferred to them by radiation, instead of convection. This is because radiation warms the occupants of a room and the room's surfaces directly, instead of first heating the air in the room. If the occupant responds by turning down the thermostat, you get energy

savings. This effect only works if there is no furniture between the radiator and the people in the room—like sitting in front of a fire in cold weather. You are more comfortable with the fire radiating to you, despite the cold air. But if something comes between you and the fire, you

need a higher air temperature to be comfortable.

Surface-mounted radiant panels work on this principle. While they are a different technology than conventional radiators, many of the concepts still apply. ⚡

Want to know more?

Visit [www.wapa.gov/es/pubs/esb/2011/jan/jan114.htm](http://www.wapa.gov/es/pubs/esb/2011/jan/jan114.htm)

# Wind Interconnection Workshop

January 19-21, 2011, Golden, Colo.

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U.S. DOE Wind Technologies Program  
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### Location:

Western's Electric Power Training Center  
1667 Cole Boulevard  
Building 19, Suite 152  
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**A**re you ready to integrate the world's fastest growing form of generation into your power mix? This two-day workshop, with an optional tour of the National Wind Technology Center on Friday, Jan. 21, will answer your questions about interconnecting wind turbines and other distributed generation applications to electric distribution systems.

Get an overview of wind energy, followed by an introduction to the Utility Wind Integration Group's Internet-based tools for assessing a distributed wind or solar project's impact on the local distribution system. Training will cover the theory behind each tool and demonstrate their use with actual data.

Continuing education credit is available for this workshop.

Participation is limited to the first 30 registrants.

Register online at [www.uwig.org/interconnectionworkshop2011.html](http://www.uwig.org/interconnectionworkshop2011.html)

The registration fee is \$300. Make sure to check the box if you plan on taking the NWTC tour, as space is limited to 20 attendees. There is no extra charge.

For more information about the workshop agenda, please contact

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