

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

Hyatt Tamaya combines sustainability, luxury

Seeking to meet the growing demand for “green” venues for conferences and workshops, the Hyatt Tamaya Spa and Resort found surprisingly simple—and cost-effective—answers to the complicated, expensive-sounding question: how can a hotel deliver a high-end guest experience using sustainable business practices?

Located on 500 acres of the Pueblo of Santa Ana between Albuquerque and Santa Fe, N.M., the resort has the luxury end of the equation covered. In addition to its unique cultural environment, amenities include a spa and salon, riding stables, an 18-hole golf club, tennis courts and the Tamaya Cultural Museum and Learning Center.

Goals coincide

The tribe undertook its effort to “green up” the Hyatt Tamaya operations in 2006. “About the same time, the Hyatt Corp. launched its global sustainability initiative,” recalled Assistant Engineer Nathaniel Jaramillo. “It helped to have the corporate support.”

Some efficiency measures were already in place, including compact fluorescent lamps and low-flow plumbing fixtures in the guest rooms. The resort was also recycling metal and compact fluorescent lights (CFLs), because of the mercury content. But that was only the beginning of what could be done.

To identify energy-saving opportunities, Tamaya management formed a green team, comprising members from each department. “We started just by asking ourselves, ‘What can we do more efficiently?’” said Jaramillo.

Reducing waste

Recycling was one area where every department could make a difference. Hotels generate a large, diverse waste stream containing many materials that can be recycled. The resort went from recycling only metals and CFLs to diverting food waste, cardboard, white paper, clear plastic and aluminum from the landfill.

Getting the recycling program up and running required a lot of staff training, Jaramillo noted. “We keep better track of waste, now,” he added. “I can tell you how many pounds of food waste, white paper and cardboard get recycled each month.”

Cardboard recycling represented the resort’s biggest investment in sustainability. The nearest city, Bernalillo, N.M., doesn’t have an infrastructure for recycling cardboard. During the



The Hyatt Tamaya heats two of its pools around the clock, but pumping alcohol across the water surface at night cuts down on the energy needed to maintain the water temperature. (Photo by Hyatt Corp.)

summer, the resort sent its cardboard to the pueblo’s casino, the Santa Ana Star, to be bailed. “It was good for the casino, too, because it was getting more use from its bailing equipment,” said Jaramillo.

In the winter, however, it became too difficult to haul the cardboard to the casino, so the Hyatt Tamaya paid a waste management company to pick up the material. That expense eventually leveled off, thanks to the comprehensive recycling effort. With so much of what used to go into the trash compactor now being recycled, the resort pays for fewer trash pickups overall. “So the cost of hauling away the cardboard is pretty much a wash,” Jaramillo explained.

Training staff

For other measures, the largest investment was in time and training. Security guards, for example, are in the perfect position during their regular rounds to turn off lights and heaters in rooms and offices that aren’t in use. The green team developed a checklist

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Hyatt Tamaya

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of equipment and systems in each area for guards to carry with them on their rounds. The checklist also has a place for noting potential energy-wasting situations or savings opportunities.

The Hyatt Tamaya's two restaurants and five kitchen units presented one of those low-cost savings opportunities. Kitchen staff used to turn on ovens in the morning and leave them on all day so that the appliances would be ready when the cook popped in a dish. "It saved a little time, but used a lot of energy," observed Jaramillo.

The green team walked the kitchens, timing how long it took to pre-heat each oven—in most cases, less than half an hour. Metal signs are now affixed to each unit telling kitchen workers the exact number of minutes necessary for ovens to reach the desired temperature.

Sustainability also means using water wisely, particularly in the desert southwest. As part of their conservation training, the maintenance staff has learned to look for water leaks in guest rooms and facilities. The landscape manager, too, has started to make adjustments in the watering schedule. As with recycling, Jaramillo pointed out that the best conservation

tool is a staff that is trained to be aware of their energy-use habits.

Efficient systems

Technology has a place in the Hyatt Tamaya's green operations, too. Putting automated timers on exhaust and supply fan systems reduced the units' running time by six or more hours in some cases.

Pool heating, a significant expense for resort hotels, is difficult to reduce because guests expect to be able to use a pool from the moment it opens in the morning. The Hyatt Tamaya heats two of its swimming pools around the clock. Installing more efficient heaters when it was time to replace the old units helped, and so did the addition of isopropyl alcohol to the water. "A layer of alcohol pumped across the water creates a thermal blanket that cuts down on energy use for heating overnight," said Jaramillo.

The expense of the alcohol initially offset the energy savings somewhat, a problem solved by finding a vendor who sold it in bulk. The better deal enabled the resort to cut out one more source of energy waste without affecting guests' comfort.

Communicating results

Integrating recycling with the conservation efforts—"basically, cutting out a lot of energy waste," Jaramillo called it—lowered the Hyatt Tamaya's combined gas and electric consumption by 5 percent in 2007. The reduction was not accompanied by a corresponding drop in operating costs, however. "We started our program about the same time as natural gas prices doubled," admitted Jaramillo. "We are using less energy, but paying more. Imagine what our bills would be without conservation!"

Methods for tracking energy use have improved too. "We adjust for factors like occupancy and weather in our reports now," Jaramillo stated. "It gives a much more detailed picture of our energy expenditures."

Projections indicate that the resort shaved almost 3 percent more off its energy use in 2008. "If the green team does its job right and continues to find new savings, the percentage will go down each year because the measures reach a saturation point," the engineer said. "That's an important message that we have to communicate to management."

Attracting business

Potential guests are another audience for the Hyatt Tamaya's message of sustainability, and Jaramillo has become actively involved in communicating with them. "I've participated in meetings with meeting planners who want to make sure the resort is 'walking the walk' when it comes to sustainability," he said.

That's the advice George Gay, CEO of the socially-responsible investing (SRI) firm First Affirmative Financial Network, gives to meeting planners who want a green conference. AFN representatives did just that when the Hyatt Tamaya answered the Colorado Springs, Colo., firm's RFP for a site for its 2007 SRI in the Rockies conference. The resort won the contract, boosting its reputation as a green conference destination.

The Hyatt Tamaya currently includes information in its sales packet about its green attributes—along with a press release about Conde Nast Traveler naming the resort one of the top 75 in the nation. It seems that "sustainable luxury" is not an oxymoron, but a business strategy for success in the highly competitive hospitality industry. ⚡

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.

The mention of any service, product, or technology does not constitute an endorsement of same and Western, the Department of Energy, or the United States Government cannot be held responsible or liable for use thereof.

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Minnesota Valley Electric members warm to heating combo incentive

Utilities concerned about the impact energy efficiency could have on their revenues might be surprised by the established—and lengthy—menu of incentives Minnesota Valley Electric Cooperative (MVEC) uses to control its rates and keep its members satisfied.

The co-op participates in grants and rebates for its Energy Wise programs. One of the most effective and popular incentives is a reduced electric rate of \$.038/kWh for residential members who allow the co-op to control heating systems during peak electricity use times. As Demand Side Manager and Energy Specialist Mike Orvick explained it, the incentives are more cost effective than buying supplemental power and are certainly cheaper than building a new powerplant. “We think of load shedding as another powerplant,” he said.

High participation rate

Orvick estimates over 50 percent of MVEC members participate in some kind of load control. In the mostly-rural, southern part of the co-op’s territory, propane used to be the heating fuel of choice. “Now, 70 to 80 percent of the water heaters belonging to our rural members are electric units, and a lot of them are load-controlled,” he said. “Under our Energy Wise rate, it just makes more sense than propane water heaters.”

The many options available through Energy Wise make it easy for members to choose a system that best fits their lifestyle. The metered electric heating program covers:

- Baseboard heaters
- Cove heaters
- Electric thermal storage

- In-floor heating
- Water heaters
- Fan-forced heaters
- Garage heaters
- Heat pumps
- Plenum heaters

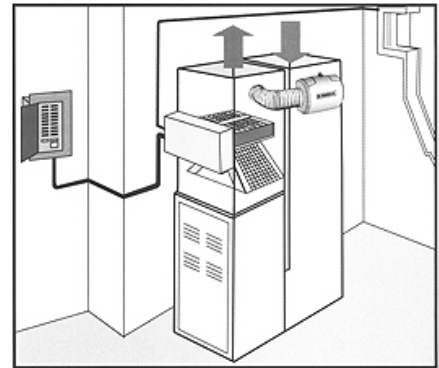
The last two systems, supported by a gas-fired backup furnace, have recently attracted a lot of attention. “It coincided with the cost of propane going up,” Orvick said. “Homeowners were calling up asking, ‘What can we do to lower our heating bills?’”

Best of both worlds

The dual-fuel system does the trick by relying on highly-efficient electrical equipment to do most of the heating. A 300-percent efficient, air-source heat pump provides home heating down to 15° F. “It’s the most inexpensive heat source, but it misses out on the core of the Minnesota heating season,” Orvick noted.

Below 15 degrees, the electric plenum heater takes up where the heat pump leaves off. A plenum heater is a forced-air heating device that fits into the infrastructure of the furnace, above the A coil. An interface switch activates the unit when the heat pump switches off, so the homeowner doesn’t notice when the system switches from one heat source to another.

Plenum heaters are only 100-percent efficient, but can be controlled by the utility, so members receive the reduced electric rate. If the temperature continues to drop, and demand peaks, MVEC sends a signal to turn off the plenum heater. The backup gas furnace kicks in, shaving the peak when electricity is at its most expensive. “The member sees smaller monthly bills without sacrificing



An electric plenum heater fits into a furnace, above the A coil. Minnesota Valley Electric offers a special rate to members who install the 100-percent efficient heater and allow the utility to control it during peak demand. (Artwork by MVEC)

comfort, and we are able to control our costs,” said Orvick.

Affordable efficiency

When MVEC first started offering lower rates for the heat pump-plenum-gas furnace combo, the payback period for installation was six or seven years, Orvick recalled. “Since propane has gone up, that period has dropped to about one and a half to two years,” he said.

Members can get extra mileage out of the system by allowing their air-source heat pumps to be controlled during the summer cooling season.

In addition to lower electric rates for controlled systems, MVEC provides rebates on a long list of electric resistance heating products. Plenum heaters, as well as boilers, baseboard heaters, cove heaters, electric thermal storage units and forced air units are eligible for \$15/kW. Rebates are also available for air-source heat pumps with a SEER 13 or higher, ground source heat pumps and electric garage heaters. “We’re seeing more applications from members installing

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Education series spotlights geothermal power

Utility, government and industry professionals who made the New Year's resolution to get a better understanding of renewable resource options can get started with the 2009 Geothermal Education Series, hosted by the Geothermal Resource Council (GRC).

"As a constant, reliable and sustainable baseload resource, geothermal energy has a critical role to play in our renewable energy portfolio," said GRC Executive Director Curt Robinson. "There are tremendous opportunities waiting to be tapped."

Power providers have often overlooked those opportunities, in part because geothermal energy is a subterranean resource, Robinson observed. "It doesn't lend itself to photo opportunities the way a wind turbine or solar panel does," he said. "That makes it more difficult to educate not only the public, but also utilities, about geothermal's potential."

To bring that potential to light, the GRC is joining with sponsors from government, the utility industry and academia to present a series of webinars and workshops about geothermal power technology and issues. The series will cover project development, power production, policy, financing and more. "Our goal is to raise awareness of how geothermal power is brought into the market place," said Guy Nelson, team lead for the Utility Geothermal Working Group. "Likewise, the utility industry and the general public need a clearer understanding of the benefits and costs of geothermal heat pump (GHP) systems."

Benefits for utilities

Sponsors include Western, American Public Power Association



The Geothermal Resource Council is hosting a webinar and workshop series to raise awareness in the energy industry about geothermal power development opportunities. (Artwork by GRC)

(APPA), National Rural Electric Cooperative Association (NRECA) and DOE's Geothermal Technologies Program. The University of Nevada-Reno and Southern Methodist University Geothermal Laboratory will also be contributing ideas and expertise to the schedule.

"APPA is always looking for opportunities to provide members with objective, current information about potential renewable energy solutions," said Michele Suddleson, manager of APPA's Demonstration of Energy-efficient Developments (DEED) program.

"Geothermal is one of the more promising renewable energy sources. Keeping cooperatives abreast of the new developments in this industry is vital," said NRECA Principal Engineer Mike Pehosh. "The technology is changing and has the potential to be installed at more reasonable cost than in the past. Also, utilities can collaborate on projects to spread the costs and reduce risks."

Direct, indirect applications

The first webinar, Renewable Energy Project Financing and Renewable Energy Credits, took place Jan. 27. "Financing is central to project development," said Nelson. "Capital is such a large part of the cost of production. Bringing down those costs—by securing lower interest rates, for example—could go a long

way toward encouraging development," he added.

The series continues March 25 with another webinar on GHP systems, a form of geothermal power available in every part of the country. GHPs can increase comfort, reduce bills, and improve the utility's bottom line, noted Pehosh, "and they can help reduce the need for additional generation. This is an area that has major impact for electric cooperatives."

Suddleson noted that APPA members are showing more interest in GHPs lately. "Some utilities that already have GHP programs are looking for ways to revitalize them, while other power providers are considering the technology for the first time," she said. "With the cost of energy going up, the time is right for launching or tuning up GHP offerings."

Heat pump and geothermal power technology will be the subject of a daylong workshop in Salt Lake City, Utah, April 22-23. The agenda will have a regional focus and a format similar to the geothermal technologies workshops Western sponsored in 2008. "Covering two related but very different technologies opens up the tent," explained Nelson. "Some attendees will come to learn about GHPs and others will be there only for production. Hopefully, everyone will learn something they didn't know before."

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geothermal heat pumps,” said Orvick. “But the up-front cost is still pretty high,” he acknowledged.

Energy resource conservation (ERC) loans can help ease the sticker shock. Members can get loans from MVEC for up to \$5,000 with a 5-percent interest rate for a term of up to five years. ERC loans can be used to finance replacement heating systems and other energy-efficiency improvements to building envelopes. MVEC sets up an amortization schedule, and payments are added to the member’s monthly electric bill.

Growing market

Because building trust with members is critical to the success of

any load control program, MVEC developed its own contractor network to ensure quality installations. “We had to because most contractors don’t know what a plenum is until a member asks for it,” said Orvick. “Luckily, we have a sharp technical assistance team to provide support.”

MVEC electricians will walk contractors through the installation of a plenum heater. Once they’ve done it, they realize that there’s nothing to it, said Orvick. “And we are comfortable the contractor will do a good job for our members,” he added.

Referrals from the co-op mean more business so contractors are eager to sign up for the installation workshops MVEC sponsors. The workshops are taught by manufacturers suggested by the contractors

themselves. “They know what kind of equipment their customers are buying,” said Orvick. “We work with a manufacturer out of Canada and Electro Industries locally. Electro Industries in particular has seen its business triple since propane started going up.”

As more contractors become experienced at installing plenums, Orvick’s job gets easier. The same is true of marketing the heating combo system and other efficient electric products. MVEC uses its bill stuffers and the occasional newspaper ad to promote the Energy Wise program, but over the last year, “Customers really went crazy for it,” he said. “The best marketing is when members sell the program to their neighbors.” ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2009/feb/feb092.htm

Education series

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Enhanced geothermal systems (EGS) are the focus of the July 15 webinar. EGS are engineered reservoirs created to produce energy from geothermal resources that are otherwise not economical due to lack of water or permeability. “Advances in technology are putting once-underrated resources within the reach of development,” Robinson said.

More events to come

The final webinar, scheduled for Dec. 9, targets power providers.

Utility Geothermal Development Strategies will address the challenges and benefits of adding direct and indirect geothermal power to a utility’s energy mix.

The Geothermal Education Series offers a comprehensive introduction to the resource’s possibilities. Participants who are inspired by the webinars to learn more can attend the GRC 2009 Annual Meeting, Oct. 4-7, in Reno, Nev. The agenda features case studies from around the world, along with an extensive utility track.

GRC and the series sponsors don’t intend to stop with the current

webinar and workshop schedule, either. More geothermal events are in the planning stage for this year and 2010. Watch the events calendar and the Public Renewables Partnership for announcements.

Expand your knowledge of geothermal power by registering for the March 25 webinar, or any of the other events. The cost to participate in each webinar is \$50, or \$35 for GRC members and members and customers of sponsoring organizations. For more information, contact Guy Nelson at 541-994-4670. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2009/feb/feb093.htm

Technology Spotlight: SSL Lighting Update

Making light from electricity is one of the least-efficient conversions of energy we use, and it accounts for about 22 percent of U.S. electricity consumption, according to the Department of Energy (DOE). So the push is on to develop and commercialize more-efficient lighting sources.

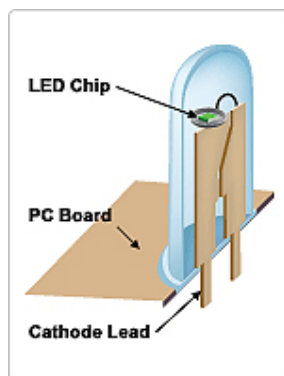
Balancing lighting's primary purpose—enabling us to see well—with energy efficiency is not easy. Beyond just seeing, light is used to set the mood and style, create corporate identities, enhance the appearance of products, influence health, provide security and more.

Incentives, standards, codes and laws are being used to increase the energy efficiency of lighting systems. Much of that effort is devoted to light-emitting diodes (LEDs), or as DOE prefers, solid state lighting (SSL).

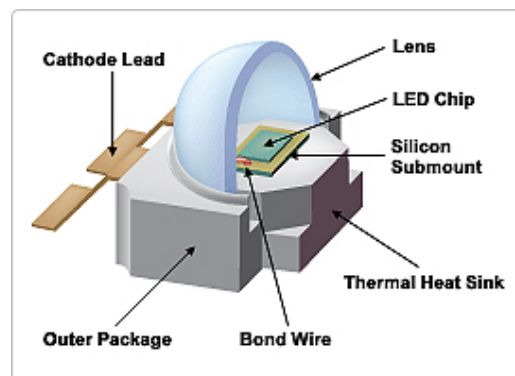
Market barriers

LEDs are a rapidly evolving technology, and the difference between what happens in the research lab and what is available in the marketplace can be great. Generally speaking, whatever you knew about LEDs six months ago is now obsolete, and enthusiastic marketing material may be misleading. How can you tell if this technology ready for your application now?

Both lighting and lighting controls manufacturers are constantly improving their products. LEDs show great promise for providing high-quality, energy-efficient light over a broad range of applications, but no one technology is best for all uses. Even in the applications where LEDs



Low-powered LEDs are used for applications such as exit signs, the green power button on a computer or a red blinking light on a video camera. (Artwork by Energy Star)



High-powered LEDs, used for area lighting, combine multiple illuminator LEDs inside a fixture to produce white light. (Artwork by Energy Star)

perform well, their current efficiency in delivered light is very close to compact fluorescent technology, and the first cost can be prohibitive. In addition to providing quality light, the system must be affordable to find a broad market.

Finding a way to provide lighting professionals and consumers with a meaningful comparison between conventional lighting and alternative technologies is another major obstacle to mainstreaming LEDs. Unlike incandescent lights and CFLs, LEDs distribute light—and heat—in a specific direction and can produce many shades of color.

Working with researchers, manufacturers and professional organizations, the DOE Solid State Lighting group developed relevant standards that took effect in 2008. Energy Star now includes selected LED products for specific applications. The standards help customers to understand the products' performance and have realistic expectations about them.

Understanding technology

Despite advertising claims, LED lighting at its best is not intended to fit existing fixtures. A well-designed LED luminaire is part of a package that optimizes LED light. It includes the LEDs, the driver (similar to a ballast), the fixture and reflectors or lenses to distribute the light and a heat sink. Thermal management is a big issue for high-power or high-brightness (HB) devices designed for general illumination, but much less so for low-powered novelty lighting.

With long lamp life claims of 35,000-50,000 hours or more, customers worry about how to deal with premature failures. Will matching replacements be available or will the technology be so far ahead that the whole system would need to be replaced?

The best place to begin research on LEDs is DOE's Solid State Lighting Portfolio. It offers basic information on how the technology works, best

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Web site of the month:

Solar Estimate

www.solar-estimate.org



Established in 2000 as FindSolar, Solar Estimate has helped more than a million people learn about solar energy and provided more than 26,000 new business opportunity notices to Solar Pros across the country.

If going solar is the answer to energy independence, why does it bring up so many questions? And more importantly, where does a homeowner or small business owner find the answer to those questions? Solar Estimate, a nine-year-old organization funded by the California Energy Commission, is a good place to start looking.

Solar Estimate is a free public service that consolidates and organizes the information consumers need to help them choose the right solar technology for their circumstances. The Web site provides consumers with user-friendly tools to make preliminary evaluations of solar energy options and to help find qualified professionals who can design, install and service solar energy systems.

Visitors can get an explanation of those tools by selecting “How it Works,” a small navigation button located just below the larger “Find a Solar Pro” button. “How it Works” is a logical starting point for users, which makes the link’s size and placement something of a misstep on an otherwise well-organized site.

Choosing a system

To determine what type of solar energy system is right for specific location and building needs, the next step is My Solar Estimator. Using the visitor’s zip code and power provider, this “quick calculator” gives a solar rating for each of four solar applications: photovoltaics, hot water, space heating and cooling or spa or pool heating.

Enter additional information, such as the monthly electric bill or the number of people in the household, to get the return on investment, payback period and even how many tons of greenhouse gas emissions an installation could save. The results page explains the assumptions used to get the estimate, and offers suggestions to reduce the size of the system for increased savings.

Hiring a professional

If the Solar Estimator indicates that installing a solar energy system is a good investment, visitors can go to Find a Solar Pro to search for a contractor. The database offers several options for searching. Visitors can use their zip code, enter a company name if they know of one or look for a contractor in a major city or state. The page also has a field for manufacturers and distributors of a variety of systems.

Solar Estimate pre-screens and profiles the solar pros in its database, but the system relies on self-certification. Contractor claims may be verified through third-party services such as ContractorCheck, local and state licensing agencies, and customer references. The Web site also provides links to help consumers do their own contractor research.

Educating consumers

The more prospective buyers know about solar technology, the more likely they are to get the system they need. And since a satisfied customer is the best advocate, Solar Estimate offers plenty of resources to further consumers’ solar education.

Important stuff is a consumer’s primer on the basics of efficiency, installation and financing. An extensive list of Frequently Asked Questions covers topics ranging from technical to economic to environmental. A searchable database allows visitors to look for answers with a keyword, by state or by category.

Solar case studies, videos and market information top the list of resources and links. Visitors will also find solar power guides, links to training and workshops, state associations, news and job sites and more information about incentives and energy efficiency.

Help for utilities

Power providers often have as many questions about solar energy as their customers do, so Solar Estimate is a valuable resource for utilities, too.

Those just launching a solar program can use the solar estimator to determine the best type of system to promote in their territory. Once a program is underway, a Solar Estimate link on the utility Web site can be a useful tool for consumer outreach. And customer service representatives

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Technology spotlight

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applications, standards and testing, the CALiPER testing results and much more.

The CALiPER project is especially helpful because it tests and rates the performance of currently available LED products and shows how big the difference can be between laboratory results and real world use. It also compares products to traditional technologies.

Workshops are announced and information from previous events and other publications is available. You can register to receive free updates about the technology by email. A section is devoted to the “L Prize” which will be awarded to developers of an LED replacement for the traditional 60-watt incandescent lamp.

Energy Star products

In the fall of 2008 the Energy Star program launched their program for white LEDs. The following product categories are now eligible for the Energy Star label. These are good applications for introducing LED technology to your facility:

- Under-cabinet kitchen lighting
- Portable task/desk lighting
- Recessed, surface and pendant-mounted down-lights
- Ceiling-mounted luminaires with diffusers
- Cove lighting
- Surface-mounted luminaires with directional head(s)
- Outdoor wall-mounted porch lights
- Outdoor step lights
- Outdoor pathway lights
- Outdoor pole/arm-mounted decorative luminaires
- Wall wash luminaires
- Bollards

SSL advocates

Other organizations and programs are working to bring LED lighting into mainstream use, too. Many are partners with the DOE program, including:

- Next Generation Lighting Industry Alliance (NGLIA) – The partnership formed SSL Quality Advocates, an initiative that developed a new, easy-to-understand and -compare, lighting performance label.

- Illuminating Engineering Society of North America (IESNA) – The recognized technical authority on illumination.
- International Association of Lighting Designers (IALD) – Dedicated to the very highest standards in lighting design.

Other resources

- The Lighting Research Center, Rensselaer Polytechnic Institute – In addition to basic research, its ASSIST program works to bring LED technology to commercial production with appropriate testing and applications.
- LEDs Magazine – Focuses on technologies and applications of LEDs including an annual Buyers guide.

There is no simple answer to whether LED lighting makes sense for a given application and facility today. Do your homework to understand the technology better and keep up with new developments. Regard advertising with caution, be clear about what you want, ask for testing results and read warranties carefully. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/2009/feb/feb094.htm

Web site of the month

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will no doubt appreciate having current information about state and Federal incentives as close as their computer.

Use Find a Solar Pro to build a vendor network, as the city of Palo Alto did when it revamped its solar hot water program. Utilities should consider setting up their own screening or certification criteria, but the database can provide a list of

potential partners. Local contractors who are already partnered with utilities can gain wider exposure by joining the Solar Estimate network.



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