

BULLETIN

Western's monthly energy efficiency and planning newsletter dedicated to customer activities and sharing information.

COLORADO DEMONSTRATION SHOWS STREETLIGHT RETROFIT A WINNER

By switching out their old streetlights, the cities of Sedgwick and Fountain, Colo., cut their electric bills and improved the quality of municipal lighting. Even better, they were able to offset the cost of the retrofits through grants and partnerships.

The opportunity presented itself in 2010, when the Colorado Governor's Energy Office (GEO) announced its Street Lighting Demonstration Grant Program. Qualifying communities would receive funding to pay for the installation of high-efficiency streetlights, and then measure their energy and dollar savings to track the return on investment.

GEO chose Sedgwick, in the northeast corner of the state and Fountain, a Western customer located south of Colorado Springs, to receive the grants. Each town would replace inefficient mercury vapor fixtures with light-emitting diode (LED) technology, and provide GEO with data on the streetlights' performance.



After Fountain, Colo., installed energy-efficient LED streetlights, energy use by the replaced units dropped more than 50 percent, roadway lighting improved and maintenance crews anticipated fewer lamp replacements. (Photo by Fountain, Colo.)

WHAT'S INSIDE

Energy Services at your service ... 3

Tip Sheet:

Cooling maintenance 4

Energy Experts:

Pool efficiency rebates 5

Website of the month:

This Land 6

COMPLETE OVERHAUL

Highline Electric Association, Sedgwick's power provider, applied for a grant with an eye on helping its municipal customer while demonstrating new technology. "Like a lot of towns in this part of the state, Sedgwick is very small and was struggling even before the recession," said Highline General Manager Mark Farnsworth. "Any measure that significantly reduces the town's operating costs is going to make a big difference."

Technicians from the cooperative replaced 53 175-watt mercury vapor lights with a combination of 50-watt

Clearlight Beacon bulbs and 40-watt Clearlight EcoSpot bulbs. The installation included 11 complete fixtures along two major thoroughfares with 100-watt Evolve LED roadway lighting.

In addition to in-kind labor, Highline contributed \$1,140.00 to the project. Tri-State Generation and Transmission Association, added \$2,524.13 in efficiency incentives, so the upgrade cost Sedgwick's 190 residents nothing. The retrofit lowered Sedgwick's previous annual cost for street lighting from \$4,877.49 to

See *STREETLIGHT RETROFIT*, page 2

\$1,762.29. If the town had paid all costs and received Tri-State's efficiency rebate, its simple payback would be 3.1 years.

TARGETED REPLACEMENT

A city of 27,000 residents with its own municipal utility, Fountain chose key areas for improvement, rather than completely replacing its streetlights.

In the space around the Fountain City Hall, 24 140-watt LED fixtures replaced the same number of mercury vapor lights. "But we drove them harder to see how they worked, and got lighting equivalent to 400-watt mercury vapor fixtures," said Fountain Electric Superintendent Jerry Early.

At a busy intersection, the city installed another 24 LEDs, this time 70-watt bulbs, as well as 14 30-watt decorative LEDs, to replace 100-watt high-pressure sodium (HPS) lights. The measured reduction in energy use for the two areas totaled 57 percent.

The Security Water and Sanitation Districts in Colorado Springs contributed funding to the retrofit. "They were super to work with," noted Early.

In a separate project funded by El Paso County, the lighting in a blighted area got a facelift with 77 52-watt fixtures, some new, replacing 175-watt mercury vapor lights. The utility is metering some of those lights individually to measure the energy use.

WEIGH ALL THE FACTORS

LED technology offers many advantages in street lighting applications. Not only do the lamps use much less energy, they don't get as hot as conventional bulbs, contain harmful compounds or attract insects. Their lifespan of up to 100,000 hours is more than twice that of new HPS bulbs, which saves money on replacement. "The lighting quality and the Kelvin rating are good," Early pointed out. "I'm a fan."

However, LED fixtures are still expensive compared to the almost-as-efficient HPS bulbs, which fit into standard fixtures. The performance of LEDs in cold weather was a problem that has been improved in newer bulbs. And the cost continues to come down, so it seems to have been in the best interest of utilities and municipalities to wait on adopting this energy-efficient technology.

See what rebates are available from utility, state and Federal programs for streetlight retrofits. And keep in mind that lighting technology has changed even in the two short years since Sedgwick and Fountain completed their projects. "It's worth checking into," stated Farnsworth. "LED lighting may be an excellent investment for your town."

TAKE THE DOE STREETLIGHT SURVEY

Because streetlights use a lot of energy and cost a lot to maintain, they are also a potential source of big savings for cities. To get an accurate picture of those costs and possible solutions, the Department of Energy's Municipal Solid-State Street Lighting Consortium (MSSLC) has launched a nationwide survey of roadway lighting.

The MSSLC is inviting municipalities, utilities and other system owners to help develop a current inventory of street lighting. The goal of the inventory project is to:

- Establish a more reliable number of the nation's streetlight types
- Identify street lighting ownership models, e.g. what is the source of funding and what entity collects the fees?
- Determine how much energy the nation's streetlights consume
- Provide a clear picture of what it costs to operate and maintain our streetlights

The inventory divides publicly funded streetlights into roadway lights and area lights. Roadway lights are subdivided into streetlights and highway lights, and include those that illuminate local and collector roads and interstates, freeways and expressways. Area lights encompass lights in public places and walkways, such as parks, public parking lots, outdoor areas and landscapes.

The survey will be active throughout the summer, and possibly into the fall. Don't miss this opportunity to participate in developing policies to reduce the energy and economic cost of street lighting. ⚡

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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For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb1.aspx>

ENERGY SERVICES AT YOUR SERVICE

Because Energy Services' mission is to help Western customers do integrated re-source plans (IRP), it is not unusual for our regional Energy Services representatives to hear from customers only when their IRPs or annual reports are due. That's OK because it opens the door to do what we do best—share ideas and resources about improving energy efficiency and management.



HELP FOR THE LITTLE GUY

Working with small customers is especially gratifying because the utility employees are often juggling many hats (and mixing metaphors).

Take the members of the Kansas Municipal Energy Agency, for example. In 2012, many of those small customers were doing their own five-year small customer plans for the first time. Bob Langenberger, then Rocky Mountain Regional Energy Services representative, went to Kansas to give workshops on completing the IRP. The well-attended workshops gave Langenberger his first chance to meet many customers in person and show them how Energy Services could be of service. "I don't have a lot of expertise in energy planning," noted St. Marys, Kan., City Manager Maurice Cordell. "Bob's workshop really helped us get through the IRP process."

When it was time to submit St. Marys' annual progress report this year, Cordell again contacted Energy Services and found a new face in Langenberger's position. But like his predecessor, RMR Energy Services representative Tim Ellis welcomed the opportunity to work with customers one-on-one. With just a little coaching, the municipal utility's annual report received approval. Cordell appreciated Ellis's help with updating his city's small customer plan, even though the Energy Services representative humbly insisted, "Bob did the hard work last year."

CONSUMER OUTREACH MADE EASY

Ellis didn't let the assistance end with the report, however. Acknowledging that St. Marys is a small customer with limited resources, he used the approval letter to suggest some low- and no-cost actions the utility could take to reduce its energy use. Perhaps the city's website could include links to online resources to educate business and residential customers about energy efficiency, help them perform self-audits, and find financing for energy-efficiency improvements. Cordell followed up with an email to learn more, and Ellis promptly sent a short list of potential links.

He recommended the Department of Energy's Homes Program and Energy Savers for general energy-efficiency tips. Good online audits include Energy Savers Do-It-Yourself home energy audit, Energy Star's Home Energy Yardstick, videos on Home Performance with Energy Star, and the DOE weatherization program.

Customers who are motivated to upgrade their homes or facilities can learn about state and Federal incentives. Western's customers can get answers to their energy questions from the Energy Experts at Washington State University free of charge.

MORE IDEAS, TECHNICAL ASSISTANCE

To encourage customers who are thinking about significant efficiency upgrades—the kind that make a difference in load management—St. Marys might consider offering performance contracting. In this type of program, contractors audit facilities and make energy-efficiency upgrades that the customer pays for with guaranteed energy cost savings. Performance contracting requires some up-front effort from the utility to start the program, but is relatively inexpensive and easy to administer once it is running. Many utilities have had considerable success getting customers to make significant efficiency upgrades with performance contracts.

Western customers can find more information on performance contracting and other programs in the Utility Options Database. The Energy Services website also provides guidance on IRPs, along with a wealth of resources on programs, measures and technologies available to customers to meet their planning goals. And, of course, our representatives are available year-round to help you with the challenges of keeping the lights on and costs down. You don't need a special occasion—call Energy Services any time! ⚡

For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb2.aspx>

NEW 'TIP SHEET' OFFERS EASY WAY TO TALK ABOUT COOLING EFFICIENCY

Whether you are inviting customers to participate in a program or offering advice on energy use, the bill stuffer is the go-to tool in most utilities' communications toolbox. It's like a greeting card to your customers, letting them know you are thinking about their needs.

Western is thinking about its utility customers' needs, too, especially those small power providers who may not have the time or staff to develop their own outreach material. For them—or any utility that needs a quick communiqué—we created The Tip Sheet: Cooling System Maintenance. One page, two sides, four colors, this bill stuffer is loaded with easy-to-act-on steps your customers can follow to keep their air conditioners working efficiently and effectively.

You may have already received a PDF of The Tip Sheet from your Energy Services representative. If not, download a copy from our publications library and imprint your utility's logo at the top of the page in the space provided. Or, if you don't have in-house graphics capabilities, we can do it for you. Just send us a JPG version of your logo and Energy Services will set up your customized Tip Sheet. You can then print as many, or as few, as you need. It's fast, it's free, with no minimum orders and no waste.

JUST THE FACTS

The Tip Sheet was born because customer education can save utilities time by proactively answering common questions. It may even turn your customers into load management allies. The irony is that you don't have time to create concise, compelling, educational copy when you're juggling a dozen customer calls, facing your afternoon cooling peak and compiling reports for your board of directors.

Your logo here

ENERGY SERVICES
THE TIP SHEET



COOLING SYSTEM MAINTENANCE

Now is the time to make sure your home's air conditioning will keep you cooled comfortably during the warm months and save on energy costs too. Whether you have central or heat pump air conditioning, ductless air conditioning (mini-splits) or individual room units, you can do a few things now to keep your air conditioner working well and prevent problems throughout the cooling season.

In general, all regular maintenance and preventative care can lengthen the life of your air conditioner, saving you the cost of buying a new one, while keeping your energy costs down and making your home more comfortable.

Follow these tips to maintain your air conditioner and spend less to cool your home. And don't forget to unplug your unit before you begin do-it-yourself projects.

CHECK	WHAT	WHICH SYSTEMS	HOW	WHY
	Check air filters -clean or change them	All	Replace disposable filters when dirty. Clean permanent filters with mild household detergent and water, and rinse well. Let filter dry completely before reinserting.	A dirty air filter makes the fan work harder and use more electricity. Keep filters clean to protect you and your family from breathing dust and allergens.
	Keep outside unit clear of grass, leaves, weeds and debris.	All except room units	Remove debris and trim foliage at least two feet away from the unit. When you mow, aim grass clippings away.	Units use less electricity when air can circulate freely through the coils.
	Check your ductwork - look for disconnected, leaky or poorly insulated ducts	Central, heat pump	Use mastic sealant or metal tape to seal all ducts you can reach. Never use duct tape. Straighten tangled or kinked ducts, or hire a professional.	Your air conditioner has to work longer and harder to replace cool air that leaks out before it reaches the rooms.
	Keep registers and vents clean	Central, heat pump	Check that nothing is blocking or sitting on the registers, including cats and dogs!	Free air circulation puts the cool air where you want it and feels cooler to the skin.
	Rinse outside coils (outside the house)	All except room units	First, shut off power to the unit, then gently wash down with garden hose.	Outside coils are meant to give off heat. Even a thin film of dirt inhibits that and makes your A/C work harder.
	Clean inside coils (inside the house)	Central, heat pump	Use a vacuum. Be careful not to damage the coil fins.	Inside coils are meant to collect heat. With clean coils, inside and outside, your A/C uses less electricity.
	Straighten condenser coil fins	All except room units	Buy a "fin comb" from an A/C dealer and carefully comb fins on outside and inside.	Straight, clean fins allow air to move freely through the coils, meaning improved efficiency.
	Unclog drain ports	Central, heat pump	Clean ports with short piece of wire hanger or pocketknife.	Your air conditioner removes water from the air. If that water can't run freely down the drain, it will eventually leak out, possibly causing damage, mold and higher humidity.
	Window seals	Room units	Inspect seal to make sure the window frame makes contact with the A/C's metal case.	Keep the hot air out and the cool air in to improve comfort and use less electricity.
	Proper location	Room units	Put the unit in a window that's not in direct sunlight.	The fan needs to cool the outside coil, and has to work harder when the sun is warming the coil.

1

The Tip Sheet can be downloaded for imprinting with your utility's banner, or Energy Services can customize it for you, free of charge.

Fortunately, the same people who answer your questions on the Energy Experts hotline and develop those handy energy calculators gave us a big hand. They came up with the "What," "Why" and "How" of keeping central, heat pump, and room cooling systems in good operating condition. Our own Energy Services crew added their ideas for making the language more consumer friendly. Throw in a list of basic instructions for all systems and links to more resources for those who like research, and you have the perfect bill stuffer for your cooling season.

LIKE IT? ASK FOR MORE!

We hope you include The Tip Sheet for cooling in your outreach materials this summer, and we would like to hear from you if you do. We also want to hear ideas for other Tip Sheet topics.

What do you want your customers to know about energy or water conservation? Safety is a subject that never goes out of style. Who couldn't use some help choosing contractors for energy-efficiency improvements? Basically, any subject that can be addressed with actionable advice can be turned into a Tip Sheet.

The goal is to give your audience useful information on one page, without piling on so many details that they lose interest. That's a tough challenge, as any member services representative knows. Energy Services feels your pain, because that's an important part of our job, too. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb3.aspx>



QUESTION:

Our city wants to build a large outdoor swimming pool that could be used Memorial Day through Labor Day. Bids are coming in too high, so we are looking for some energy efficiency angles that might qualify for utility incentives. Our utility is interested in heat pumps—air or ground source. An adjacent building needs cooling, and a nearby facility uses lots of hot water—might there be tie-ins with these cooling/heating needs? What about lighting?

ANSWER:

Your utility is on the right track. Heat-pump technology can be the most energy-efficient way to meet space or water heating and cooling. Heat pumps can be air source or water source. A stand-alone heat pump is an efficient way to heat the pool. However, heat pumps can also use waste heat from nearby sources, creating a great opportunity to capture energy that might otherwise be thrown away. Generally speaking, colder climates benefit from the added cost of water or ground source heat pumps. Air source heat pumps are more efficient in warm climates.

Inverter-driven compressor heat-pump technology—also known as variable refrigerant flow (VRF)—is the most efficient system available. VRF technology needs a connection to each zone to allow for heat re-use. The connection medium can be a condenser (or ground) loop, a refrigerant loop or a combination of the two.

The diagram below shows a combination of water and refrigerant circuits that can transfer heat from one building or zone to another building or zone. Both the water and air heat pumps are VRF. The indoor units can provide either space or water heating or cooling.

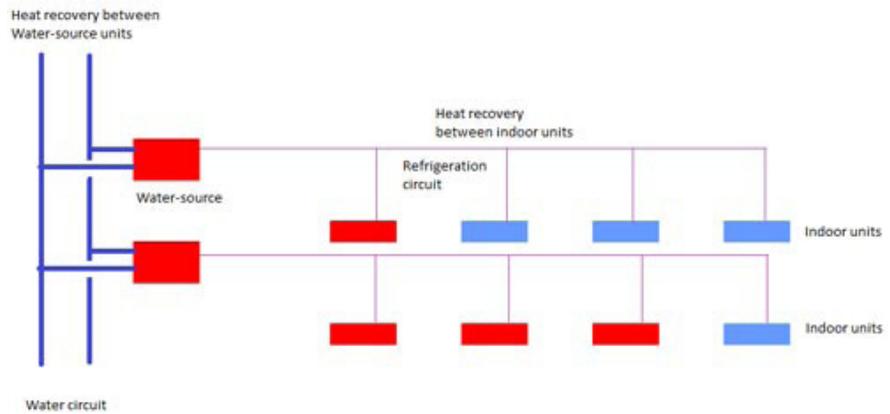


Figure 1: Refrigerant and Water Circuit Heat Transfer

Typically, the water-condenser loop has a boiler. However, routing the condenser loop to the building for cooling will transfer the heat from that building to the loop. The condenser loop then carries the rejected heat from that building to the source needing heat, the pool. If the nearby facility uses a lot of hot water, a heat exchanger around the waste lines will collect heat to help heat the pool. These sources may provide enough heat to eliminate need for the boiler.

If your solar access is good, the condenser loop could be routed to collect heat from the sun. A qualified solar installer can help you evaluate the options and economics for your site.

Once the water is heated, reducing heat loss will save energy. In a windy area, planting trees or building a windbreak to slow the wind will also slow evaporation. If you install solar heating, make sure the windbreak does not interfere with solar access.

A pool cover provides the greatest energy saving feature in a pool. A wide choice of covers includes some that also provide security to prevent accidental entry to the pool. There are floating covers, rigid covers for unoccupied periods and covers that lift while the pool is in use but also trap

heat. Consult your insurance company, as well as code officials to pick the cover that will serve your needs best and meet local regulations.

LIGHTING

Of all the purposes lighting may serve at a pool, providing good visibility for safety is the most important. At a minimum, a seasonally used outdoor pool must meet whatever basic safety codes your jurisdiction has. If the pool is used only during the day, only minimal lighting will be necessary at night. Energy efficiency is important, but safety issues always come first.

For nighttime use, both the pool and surroundings must be lit (but not brightly) to minimum standards at least. Low-mounted lighting for pathways and areas right next to the pool will reduce water reflections, which can hamper visibility into the pool. Light trespass (area lighting spilling outside property lines) is a growing concern in many jurisdictions, but pools should not be brightly lighted areas, so it shouldn't be a big problem. If installing perimeter lighting, place fixtures to distribute light on the pool property, not onto the water surface.

See ENERGY EXPERTS, page 7



WEBSITE OF THE MONTH:

THIS LAND www.thisland.illinois.edu

With summer in full swing, everyone from hobby gardeners to professional growers is tending their crops, so it's a good time to educate residential and agricultural customers about best practices for working This Land.

The website turns an award-winning book series from the University of Illinois Extension into tips for homeowners and farmers on protecting land and water resources. The tips tell how to reduce chemical use; manage yard, crop and household waste; and improve groundwater and surface water without sacrificing aesthetics or crop yields. These issues concern utilities, too, especially rural cooperatives, municipalities and water providers.

MAKE A DIFFERENCE AT HOME

Many people would like to do something to protect the environment, but quickly get overwhelmed by all the issues and advice. Help your residential customers break it down with 57 Ways to Protect Your Home Environment (and Yourself). These practical steps for homeowners cover such topics as landscaping, pesticide use, hazardous waste recycling, and energy and water conservation.

Common sense abounds, starting with possibly the smartest landscaping tip for homeowners ever, Aim For a Healthy Lawn Rather Than a Perfect Lawn. An alarming amount of fertilizer and pesticide ends up going down the drain, and into our surface water, because of the pursuit of that golf course-like green carpet. Encourage your yard perfectionist customers to give themselves—and the city's water treatment system—a break this summer with a bill stuffer based on this tip.

This Land offers lots of useful information on mechanical and



organic alternatives for fertilizing and protecting lawns, as well as the appropriate use, storage and disposal of toxic chemicals, and identifying and mitigating household air and water contaminants.

Because the site was developed for the Midwest, tips on native landscaping and pest management tend to have a regional focus. Western utilities might enlist the Cooperative Resource Extension in their area to customize the advice for the local environment.

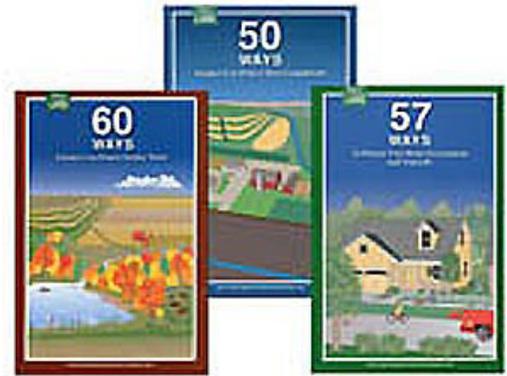
WATER BELOW

According to the website, groundwater supplies drinking water to more than half of the United States population, including nine out of every ten rural citizens. 50 Ways Farmers Can Protect Their Groundwater offers a list of voluntary practices growers can adopt to protect a resource we all rely on in one way or another.

As such, the majority of the advice here focuses on the use of pesticides and fertilizers. However, well location and construction are issues that may directly involve utilities, so read the tips on those subjects and share them with your agricultural customers. Water and municipal utilities might also find the water testing and irrigation tips relevant to some of their customers.

ON THE SURFACE

The final set of tips, 60 Ways Farmers Can Protect Surface Water, is a comprehensive, practical guide to protecting the



quality of our lakes and streams without sacrificing production. These tips address the factors that affect soil erosion, runoff and seepage, and suggest strategies to control the problems.

Even if your utility isn't a water supplier, you can still use the information on This Land to open doors with your agricultural customers. A conversation about crop residues could easily lead to a discussion about efficient irrigation equipment and pump motors. Consider partnering with the local Cooperative Extension Service or Natural Resources Conservation Service for an outreach campaign, or offering the book series as a drawing prize at a customer meeting.

This Land underscores how inter-related water and soil quality are, and how those issues affect everyone. Rural towns and farming communities are closer to that truth than most. The resources on this website can help power and water utilities build stronger bonds with their customers, while working to ensure the health of the community's soil and water. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb5.aspx>

