

# Energy Services **BULLETIN**

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

## University of Utah leads pack in green power use

To all the factors students and parents use to evaluate colleges—academics, sports, financial aid, even fire safety—you can now add sustainability, and place the University of Utah (UU) in Salt Lake City among the leaders.

On its January 2012 list of Top 20 Colleges and Universities for green power purchases, the EPA Green Power Partnership ranked UU third nationally, just behind University of Pennsylvania and Carnegie Mellon University. In the 2011-2012 Green Power Challenge, the university leads the second-place PAC-12 Conference, purchasing more than 98 million kilowatt-hours (kWh) of wind power.

The Environmental Protection Agency estimates that UU green power purchases are equivalent to more than 36 percent of its energy use. “Green power purchases allow us to reduce our footprint even further in a cost effective way,” said UU sustainability coordinator Jen Colby. “It’s an honor to be in the top five nationally.”



**At a press conference, ASUU Student Body President Neela Pack talks about the University of Utah’s new fund to support renewable energy purchases. UU purchases some wind RECs from Rocky Mountain Power’s Blue Sky Renewable Energy Program. (Photo by Office of Sustainability, University of Utah)**

### Purchase logistics

UU is lowering its carbon footprint by buying renewable energy certificates (RECs) from wind farms through REC marketer 3Degrees. “We looked at all the options and wind power was the most affordable,” explained Ashley Patterson, outreach coordinator for UU’s Office of Sustainability.

The university also subscribes to Rocky Mountain Power’s Blue Sky Renewable Energy program at the “visionary” level.

The purchase of Green-e certified RECs is funded by fees and donations the university collects through various renewable energy campaigns. UU retains formal ownership of the offsets, making the donations from non-students tax deductible.

### Students started it

As often happens on college campuses across the country, students set UU on the path toward renewable energy leadership. In 2005, the Associated Students of the University of Utah (ASUU) launched a campaign to create a small student fee to pay for clean energy purchases. All of UU’s 32,000 students now pay \$1.00 “green” fee to support the purchase of renewable energy.

About a year after the ASUU renewable energy campaign started, Dr. Chris Hill of the biochemistry department started a similar campaign for the staff and faculty. Currently, that renewable energy campaign has about

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## University of Utah *from page 1*

200 donors. Other UU departments, programs and annual events followed with their own campaigns to support renewable energy and achieve climate neutrality. There are now more than 40 renewable energy campaigns on campus that accept voluntary contributions from faculty, staff, alumni and the public.

The large scale of the program helps keep the price of the RECs down to \$3 per megawatt-hour (MWh). The typical U.S. household with the average annual use of 10 MWh, can offset its entire electricity consumption for \$30 premium per year—less than a 5-percent increase in a typical Utah residential electricity bill.

### Other green measures

Of course, no form of energy is so affordable that a large institution can afford to waste it, which is why UU has an Energy Management Office. The office targets three areas to reduce energy consumption: building performance, energy conservation and behavioral initiatives.

Tracking utility data, re-

commissioning building systems, implementing retrofit projects and leveraging utility incentives to fund improvements are all part of UU's energy management strategy. Efficiency upgrade projects include retrofitting T12 lighting, adding automated lighting controls, implementing IT software and upgrading HVAC ducting to improve distribution. The energy savings from these improvements accumulated between July 2007 and January 2012 total 183,931,251 kilowatt-hours, 593,795 decatherms of natural gas, 35,392,000 pounds of steam and 1,363,531 million British thermal units.

Campus-wide energy-efficiency projects are an important source of energy savings, too. The Energy Office has and assisted with grant applications for photovoltaic installations. Providing design assistance to build efficiency into new facilities, and working with power providers to obtain rebates and incentives are also part of UU's energy conservation strategy.

Efficient buildings and systems work best if occupants understand and use the features, so the Energy Office also has an outreach program to build energy awareness. Facilities managers receive training in the proper operation of system controls. A behavioral specialist is available to consult with "green teams" around campus to educate students, faculty and staff about simple energy-saving habits and measures.

As important as energy use is, UU recognizes that there is still more to creating a "green" university. The UU Office of Sustainability also supports recycling efforts, water conservation,

local and organic dining options, low-impact transportation and more. Students can also enroll in sustainability-related courses and programs, and explore new ideas and technologies at the Sustainability Research Center. The Student Campus Initiative Fund, another student-led initiative, collects a \$2.50-per-semester student fee to fund grants for students to put their energy-efficiency and conservation ideas into action on campus and in the community.

### Preparing for the future

These efforts, along with the renewable energy purchase, have landed UU on the Princeton Review's list of 311 Green Colleges for three years in a row. The national guide is published to aid prospective students in choosing a college.

The reason the Princeton Review includes sustainability in its evaluation goes beyond mere idealism. Students understand that renewable energy offers a career path, as demonstrated by the two undergraduates who started the wind power campaign. One is now working for Utah Clean Energy, and the other is associate director of the California Geothermal Energy Collaborative at the UC Davis Energy Institute.

A great basketball team may still attract more students than a strong "green" program, but students want to prepare for the future, too. With its forward-looking sustainability program and renewable energy purchases, University of Utah is schooling the competition in that game. ⚡

### 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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visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb1.aspx>

# Knowing customers key to motivating energy-efficiency upgrades

*Editor's note: The third story in our series on overcoming barriers to implementing energy-efficiency improvements tackles the most elusive factor—the customer.*

**W**e Energy Services professionals spend a lot of time trying to figure out how to persuade customers to take advantage of utility retrofit programs—and often end up scratching our heads. Clearly, you can lead a horse to water, offer low-interest loans to dig the well and train contractors to build state-of-the-art troughs, but the horse drinks when the horse is ready.

Motivating customers to act on audits or incentives is not necessarily the most difficult part of a retrofit program, but it is the one subject to the most variables. Professional associations and state and local regulators can provide information and data on the specific challenges you face related to project financing or finding qualified contractors. But figuring out how to get a customer to act is, at its core, a one-size-fits-one proposition.

EnergySmart Colorado and Energy Upgrade California are two state-run programs that partner with utilities to encourage consumers to make energy-efficiency improvements on their homes. (Photo by Community Energy Exchange)

## Why and why not

There are, however, common factors program designers can use as a jumping-off point. A market research report done by MIG, Inc., for Energy Upgrade California, offers a list of motivators:

- Saving money and cost savings on home utility bills
- Comfort
- Energy independence
- Environmental benefits
- Doing the right thing

The same report identifies common barriers to energy-efficiency improvements, as well:

- Cost of upgrades
- State of the economy
- Belief that the home is already energy efficient
- Interest rates and financing requirements
- Lack of a sense of urgency

Little, if anything, on either list is likely to be news to member services professionals. But one finding in the report might come as a surprise—learning more about the program did not increase customer participation. Specifically, people liked hearing about rebates and energy savings, but would lose interest when the conversation turned to interest rates and equipment and installation costs—in other words, the barriers.

## Signing up

You can't make the barriers disappear, but you can streamline requirements so that customers don't need a crash course in financing, permitting and other complexities to apply. Simplifying the application process is one of the most important steps you can take to make any rebate program more attractive to customers. The same goes for contractor participation, too.

A streamlined application must still collect the data you need to evaluate your program or report to funding entities—admittedly, a difficult balancing act. That's why the environmental engineering firm The Cadmus Group recommends not rushing the program design phase whenever possible.

Another suggestion is to build your database and application form at the same time to ensure that the form asks the customer for the information you need. Consider inviting some customers to review the application



**EnergySmart Colorado and Energy Upgrade California are two state-run programs that partner with utilities to encourage consumers to make energy-efficiency improvements on their homes. (Photo by Community Energy Exchange)**

for usability, and offer a paper version as well as an online application. These steps can help to create an application process that meets both the customers' and the utility's needs.

## Getting in the door

Even the most streamlined application does not eliminate the need for marketing—utilities still need to meet customers where they live, sometimes literally.

Fort Collins Utilities in northern Colorado leveraged one of its energy conservation programs to bring customers into another. The Home Energy Reporting Program not only lowered energy consumption across the group of participants by more than 3 percent, it sparked interest in energy-saving retrofits. Integrated into their bimonthly reports are targeted messages inviting customers to take energy savings to the next level with home energy audits, improvements and rebates. To date, the municipal utility's Home Efficiency Program has completed more than 350 home efficiency upgrades.

*See KNOWING CUSTOMERS, page 4*

## Knowing customers

from page 3

Energy Upgrade California had to reach a much larger, much more diverse audience than Fort Collins Utilities customers. The initiative is a statewide program managed collaboratively by the California Energy Commission, California Public Utility Commission, local governments and California's four major utility providers. It has attracted partners that include building contractors, architects and designers, environmental organizations and home improvement store staff. Neighbors and other homeowners turned out to be excellent representatives for the program. In Hispanic neighborhoods, for example, respected local women were enlisted as promotoras, liaisons with the community, to explain the program to residents.

These examples, which turned existing circumstances into marketing tools, were part of an “all of the above” marketing strategy that both programs employed. Both Fort Collins Utilities and Energy Upgrade California used press releases, bill stuffers, paid advertising, social media, events, partners and professional consultants to get their message out. How a utility spreads the word about its retrofit program depends on its customers—how they get their information, what type of marketing they have responded to in the past, which motivators are most likely to speak to their needs. Look at what other utilities have done to get ideas for marketing your program, but look first at your own customers.

### Hand holding required

Successful marketing is only the beginning of the battle—it ain't over 'til the upgrade is installed and reducing energy bills. Your customers

will have lots questions about the application, financing, the equipment or system, contractors and more. Finding a way to answer those questions quickly and thoroughly will improve chances of follow-through.

Energy Upgrade California provided a “one-stop” web portal that serves as a decision-making tool for homeowners. The site includes education, a contractor directory, explanation of rebates and incentives, financing options and customized local information. Visitors can enter their zip code to connect with their own county and utility—particularly important in a statewide program.

An energy coach or advisor may be just what your customers need to get through a retrofit project. A third-party energy services vendor, staff person, intern or knowledgeable volunteer could fill that role depending on your budget, program structure and the size of your service territory.

Loveland Water and Power contracts with the energy services consultant Lightly Treading to provide customer support throughout the upgrade project. Lightly Treading performs the home audit, obtains contractor bids if the customer requests it and follows up with customers about the top recommended home measures. Populus Sustainable Design Consulting provides similar services for Boulder County's EnergySmart Colorado program.

If you don't have the budget or the staff for energy coaching, consider partnering with the energy program at local vocational schools. Students from the Rocky Mountain Education Center at Red Rocks Community College have teamed up with business leaders in Lakewood, Colo., to cut building operating costs. Not only are such partnerships good for your current retrofit program, they cultivate the

workforce you'll need in the future and build strong ties with the community.

### Striking the hot iron

Finally, when the customer is ready to make a decision, don't let that moment go to waste. One of the lessons that emerged early on from Energy Upgrade California is the importance of catching consumers at “decision points.” When an appliance or home system breaks down, when a major life change occurs, when they are remodeling anyway or even when they call the utility with a complaint—these are the times to suggest an efficiency upgrade.

Try running ads for your program in family-oriented media or placing information with retail partners or architects or designers. Work with energy auditors who follow up with homeowners after the audit to answer customer questions. Make sure your member services representatives are well versed on your retrofit programs and ready to answer customer questions, or even schedule a contractor appointment.

Also, stay alert to customers' changing attitudes. While conducting the public process for its integrated resource planning, Tri-State Generation and Transmission Association learned that its member system customers wanted more energy-efficiency programs. As a result, the power wholesaler created a broad menu of incentives and rebates for both residential and business customers.

Above all, don't be daunted by challenge of marketing a utility retrofit program. The potential benefits are well worth the payoff—reducing utility costs while increasing customer satisfaction. And when customers know that their utility “has their backs,” the job of program marketing—heck, the job of delivering reliable, affordable power—becomes easier. ⚡

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

# New DSM guidebook explores distributed generation for resource planning

The “good ol’ days” of centralized, large-scale power plants generating electricity remotely to send down power lines to consumers may be giving way to a smaller, more adaptable model—distributed energy systems. To help Western customers figure out how these diverse, flexible power sources might fit into their operations, Energy Services has updated its Demand-Side Management Guidebook: Renewable and Distributed Energy Technologies (4.3 MB pdf).

## One idea, many forms

Distributed energy systems are generators that can be placed at or near the load, such as wind turbines, solar power, fuel cells, micro-turbines or reciprocating engines. Whether combined with load management and energy storage systems or stand-alone, distributed systems can improve the electricity supply’s quality and reliability.

Flexibility is the watchword with this technology (or batch of technologies), which can be as simple as a small, stand-alone electricity generator installed to provide backup power at a consumer’s site. More complex systems may be highly integrated with the electricity grid and consist of electricity and thermal generation, energy storage and energy management systems. Consumers may own the small-scale, on-site power generators, or a utility or third party might own and operate the system.

As distributed generators go the way of personal computers and cell phones, getting more compact and affordable, consumer interest in owning the systems is growing. Utilities need to prepare for this trend if they are to enjoy the potential benefits distributed generation offers power providers. To use grid-connected distributed energy resources to efficiently dispatch and

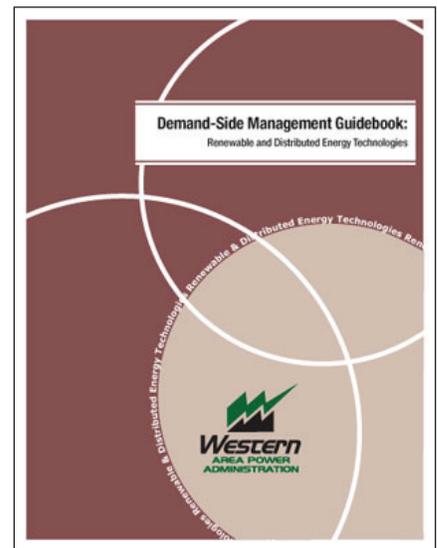
operate generating units, transmission systems may need new power electronic interfaces and communications and control devices.

## Value for utilities, customers

The small size and flexibility of distributed power generators offer unique benefits that centralized electricity generation does not. The technology can provide power where and when it is needed. It also has the potential to mitigate congestion in transmission lines, reduce the impact of electricity price fluctuations, strengthen energy security and provide greater stability to the electricity grid.

Grid-connected distributed energy resources support and strengthen the central-station model of electricity generation, transmission and distribution. While the central generating plant continues to provide most of the power to the grid, the distributed resources can be used to meet the peak demands of local distribution feeder lines or major customers. Computerized control systems, typically operating over telephone lines or through wireless networks turn distributed generators into dispatchable resources, generating electricity as needed.

For customers, natural gas- or renewable resource-powered generators offer a quieter and less polluting choice, suitable for on-site installation in some locations. Distributed energy technologies can improve efficiency and lower energy costs, particularly in combined heating and power (CHP) applications. CHP systems provide electricity along with thermal energy that can be used for hot water, heat for industrial processes, space heating and cooling, refrigeration, and humidity control to improve indoor air quality and comfort.



## Resource for Western customers

For all of these reasons, distributed energy technologies are playing an increasingly important role in utilities’—and the nation’s—energy portfolio. That’s why Energy Services has updated the DSM guidebook for distributed generation. Originally published in 1991, the guidebook was long overdue for an update, said Energy Services Manager Ron Horstman. “There were so many new technologies we wanted to incorporate,” he explained. “If customers are to consider distributed generation in their integrated resource plans (IRPs), they have to be aware of all the options available to them.”

The guidebook, reviewed and updated by the National Renewable Energy Laboratory, provides an in-depth look at those options. The introduction offers an overview of the technology, including benefits and various applications. Each chapter covers a different topic:

- Renewable power generation— Electricity generation from renewable resources
- Direct use of renewables — Ways to use renewable resources for heating, cooling, and mechanical power without first converting it to electricity

*See DSM GUIDEBOOK, page 7*

## Technology Spotlight:

# Worm gear speed reducer efficiency and choices

**W**orm gears are drive system components that make the output shaft speed different from the input shaft speed, amplify torque, and/or change the direction of shaft rotation. Several types of gears, including the worm, bevel, spur and helical may be employed when loads need to run slowly but require high torque (Singh, Pacific Gas & Electric Company, November, 1994).

### Useful, versatile

In spite of their relatively low energy efficiency, worm gears have many advantages and are widely used in packaging machinery, conveyors, materials-handling applications, and pharmaceutical and food processing plants. They have a low initial cost, are compact, deliver high speed reductions, offer fine speed control with long service life, feature quiet operation, and can withstand high overloads. Worm gears are also self-locking: the worm can drive the gear, but the gear cannot drive the worm.

A gear reducer amplifies torque and reduces speed, and is classified according to the gear ratio (the ratio of the input to the output shaft speed). For example, a 20:1 gear reducer will multiply the output torque delivered from a motor shaft by a factor of 20 and reduce the speed by an equivalent factor.

### Calculating performance

Gear reducers have different performance characteristics, including the range of available gear ratios,



Worm gear

Bevel gear

Helical gear

Spur gear

(Photos by Washington State University Extension Energy Program)

operating efficiency and maximum horsepower rating (See Table 1). Some gear reducers, such as spur gears, deliver output that is parallel to the motor shaft; others, such as worm, helical, and bevel gears, deliver output that is at right angles to the motor shaft.

The efficiency of a gear reducer is the output shaft power divided by the input shaft power. Tooth friction, lubricant churning, seals, and windage cause power losses. Frictional losses are related to how the gears intersect and mesh, gear reduction ratio, gear size, and the coefficient of friction, related to the selection of lubricant.

Manufacturer catalogs generally do not provide gear reducer efficiency, but you can calculate it from gear performance values:

$$\text{Efficiency (\%)} = [\text{Torque} \times (\text{RPM}/\text{GR}) / (\text{HP} \times 63,024)] \times 100\%$$

Where: Torque = Gear reducer output torque in inch-lbs

RPM = Motor shaft speed

GR = Gear ratio

HP = Motor shaft horsepower or input horsepower to gear reducer

Figure 1 illustrates that worm gear

efficiency depends on gear ratio and HP rating. Worm gears are inefficient because they experience a sliding action instead of a rolling motion between the worm and the worm wheel. The lead angle of the worm, sliding speed, lubricant, material selection and surface quality and installation conditions all affect worm gear efficiency. Due to the high losses, worm gears operate at much higher temperatures than other gear types. Additional efficiency reductions occur at lower input speeds, at partial loads and with lower quality gears.

### Maintaining to boost efficiency

Worm gears require lubrication because worm boxes disperse heat. Using synthetic lubricants instead of mineral oil-based lubricants will increase efficiency and extend gear life.

Consider the energy savings possible from replacing a worm gear that has a load or input requirement of 5 HP and a 50:1 gear ratio with a helical/bevel gear. The worm gear efficiency is 80 percent while the equivalent helical/bevel gear efficiency is 95 percent. The worm gear is driven by a 7.5 HP motor with an efficiency of 91 percent.

Determine energy savings with the formula:

$$\text{Energy savings (kWh)} = (5 \text{ HP}/0.91) \times 0.746 \text{ kW/HP} \times \text{hours/year} \times (1/\text{WG} - 1/\text{HB}) \text{ or}$$

Table 1. Gear Reducer Types, Gear Ratios, and Efficiency Range

Gear Reducer Type	Gear Ratio Range	Efficiency Range (%)
Spur	1:1 to 6:1	98%-99%
Helical	2:1 to 10:1	92%-98%
Bevel	1:1 to 5:1	97%-99%
Helical/Bevel	5:1 to 200:1	92%-95%
Worm (single stage)	5:1 to 100:1	55%-94%

(From: Sadrul Ula, et al. "Energy Efficient Drivepower: An Overview," Bonneville Power Administration, Western Area Power Administration, U.S. Department of Energy)

See TECHNOLOGY SPOTLIGHT, page 7

## Technology Spotlight

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Energy savings (kWh) = Initial Input kW x hours/year x (1 – WG/HB )

Where: WG is the efficiency of the worm gear and HB is the efficiency of the helical/bevel gear (in %/100)

Assuming annual operation of 8,000 hours, the energy savings are 6,472 kWh per year, or 15.8 percent of the initial or baseline annual energy use for the worm gear. At an electrical energy rate of \$0.08/kWh, annual savings are \$517. Replacing old standard efficiency gear drive motors with new premium efficiency gear drive motors may yield additional energy savings. Increasing the gear reducer efficiency can provide an opportunity to downsize the replacement motor.

The energy savings per unit is not huge, but multiplied by the large number of gears at many sites, overall

savings can be substantial. For instance, a large airport might use 20,000 gear reducers for conveyors and escalators, and 5,000 of these could be worm gears.

Specify high-efficiency gear reducers for all new projects or retrofits. Retrofits require a trained eye and product familiarity to identify worm gear drives (helical/bevel gears have a longer box). Focus on applications with high gear ratios. Each gearbox has its own nameplate and the manufacturer may need the serial number to identify the gear type and operating characteristics. Sometimes just the gearbox can be replaced; in other

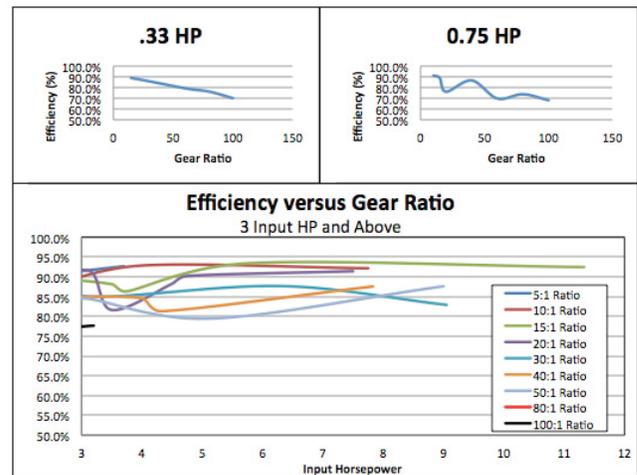


Figure 1. Worm Gear Efficiency versus Gear Ratio and Input Horsepower (1800 input RPM)

cases, an integral right angle gear drive motor should be purchased. For a worm gear, the “distance” is measured from the centerline of the worm to the centerline of the worm wheel. Physical constraints, such as mounts, couplings, shaft size, and gear reducer distances, can present obstacles. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb4.aspx>

## DSM guidebook

from page 5

- Non-renewable distributed energy — Electricity generation, cogeneration and thermal technologies that do not typically use renewable resources; novel power-generation technologies that are on the horizon
- Energy storage and hybrid power — Ways to store electrical energy; combining various power generators into a hybrid power plant
- Systems integration and load control — Technologies and approaches for connecting distributed power systems to the

electricity grid and monitoring and controlling them

“This is a comprehensive resource that we believe our customers will find very useful in developing their IRPs,” Horstman said. “We hope that the guidebook will lead them to take another look at technologies or strategies that might not have seemed feasible to them 10 or even five years ago.”

### Times keep a-changin’

As much as technology has evolved since the first DSM guidebook for distributed generation, it is changing even faster today. Fortunately, the biggest change in the last 20 years—electronic communications—makes it easier to keep up with changes in other fields.

Instead of printing the Demand-Side Management Guidebook: Renewable and Distributed Energy Technologies, we’ve published it online. You can download the guidebook to your own computer desktop, or even print it out for a little bedside reading.

Better yet, we can update the chapters in a more timely fashion and distribute the changes to our customers with a few mouse clicks.

“The next few years will bring very exciting new developments in all aspects of distributed generation,” Horstman declared. “Energy Services is looking forward to sharing that information with our customers and watching how they put it into action.” ⚡

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

## Website of the month:

# Water conservation roundup

**T**he peak water use season approaches, and it's time to start reminding your customers that saving water and energy go hand in hand, especially in the dry west. Check out these websites for conservation tips, campaign ideas and links.

### Conservation for everyone

The name may be awkward, but Water—Use It Wisely offers a wealth of resources, from 100+ Ways to Conserve to a partnership program with three different levels. This 10-year-old program provides a strong foundation for water conservation outreach, at whatever level you choose.

The no- and low-cost measures you can take to start building consumer awareness include linking to the program, downloading the water conservation tip widget and connecting with Water—Use It Wisely on social media. Municipalities, businesses, individuals, educators and nonprofits will all find tools to help them join the cause of water conservation. If you have a budget for outreach, but lack the time and staff to launch a campaign, you may want to make the one-time investment in a Water—Use It Wisely partnership. The three different levels come with license to co-brand promotional materials, discounts on store items and, at the higher levels, marketing plans.

To expand your knowledge about water issues in your region, or to target your outreach to specific customer needs, visit links and resources.

### Irrigation resources

Getting growers to choose and use the best irrigation practices for their region and crops is a big issue—and challenge—for many utilities in

Western's territory. Irrigation is a highly complex subject with entire academic institutes and government agencies dedicated to its study. Fortunately many of these organizations have websites.

The U.S. Department of Agriculture approaches irrigation from a number of different directions. The Economic Research Service studies irrigation and water use to provide information on economic and policy issues. The USDA National Resources Conservation Service (NRCS) works with landowners to plan for productive lands and healthy ecosystems. The resources offered by the NRCS irrigation program include software, handbooks and manuals, discussion forums training and research.

The USDA also has service centers throughout the country, where utilities and consumers can get water conservation information tailored to their region's needs.

The Center for Irrigation Technology (CIT) at California State University Fresno is dedicated to advancing water management practices and irrigation technology. Utilities can share the center's research publications or CIT's software tools with growers in their territory.

One of CIT's partners in promoting efficient irrigation technologies, products and services is the Irrigation Association (IA). This membership organization targets equipment and system manufacturers, dealers, distributors, designers, consultants, contractors and end users.

A utility doesn't need to be a water provider to be concerned about irrigation season. The Energy Experts' Pumping System Efficiency Calculator can help your irrigation customers learn if their pumping motors are driving up their operation costs and your peak load.



**Water—Use it Wisely is one of many resources utilities can tap to promote water conservation to consumers. (Artwork courtesy of Water—Use it Wisely)**

### Home and garden

Of course, your customers may just be concerned about keeping their yards beautiful and their pools fresh, and there are plenty of online resources to help them do so efficiently.

Some of Western's customers have created comprehensive guides to xeriscaping and drought-tolerant landscaping suited to western water challenges. Visit Waterwise Gardening, a website by the Los Angeles County Department of Water and Power, for fact sheets and instructional videos covering native plants, fire-wise gardening, composting and more.

Start planning your low-water landscape today, using seven principles based on sound horticultural practices from Fort Collins, Colo. The city also offers water-wise lawn care tips for traditional blue grass lawns.

The Environmental Protection Agency has developed a water-efficient landscape planner tool visitors can download for free. CIT's WaterRight site offers irrigation scheduling programs that help users develop site-specific, seasonal irrigation schedules.

These resources barely scratch the surface of what you will find once you take the time to explore the web. And utilities should make the time—water and energy use are too firmly linked for utilities not to consider how water affects their energy efficiency and conservation efforts. ⚡

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