

# BULLETIN

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

## CITY OF PALO ALTO NOW RUNNING ON CARBON-FREE ELECTRICITY

**B**oldly going where very few municipalities in the United States have gone before, the Palo Alto city council has committed to pursue only carbon-neutral electric resources from now on.

Implementing a Carbon Neutral Plan is expected to reduce 330,000 metric tons of greenhouse gas (GHG) emissions in 2013 through 2016. Beyond 2016, most of the city's reductions of GHG emissions will come from achieving a renewable portfolio standard (RPS) of about 50 percent.

Taking carbon dioxide (CO<sub>2</sub>) out of the atmosphere won't take money out of rate payers' pockets, however. The City of Palo Alto Utilities (CPAU) estimates that the carbon neutrality plan will increase the average electric bill by less than \$3 per year.

### NO TIME LIKE THE PRESENT

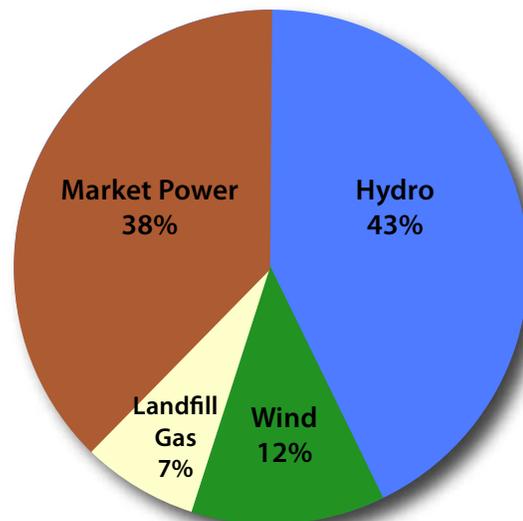
Reaching carbon neutrality was not a matter of "if," but "when." The city got the ball rolling in 2003, passing an RPS of 33 percent new renewable energy by 2015—five years sooner than California's

target. Creating a Climate Protection Plan in 2007 moved the ball forward, and when renewable energy prices dropped over the last two years, the goal came within reach sooner than expected. Mayor Greg Scharff commented, "When we realized we could achieve a carbon neutral electric supply right now, we were compelled to take action."

To meet its aggressive RPS, Palo Alto issues requests for proposals (RFPs) annually. The response to the RFPs was particularly strong in 2011 and 2012, and the prices were very competitive. "Especially on solar," noted Jane Ratchye, Palo Alto's assistant utilities director for the Resource Management division. "We signed one large solar contract that increased our renewable portfolio by about 5 percent. We are also negotiating with three more solar developers that could increase our RPS dramatically."

Along with wind, landfill gas-to-energy and existing hydropower from Western and other hydro plants, more than 70 percent of CPAU's electricity supply is renewable now. Short-term renewable energy certificate (REC) purchases offset the non-renewable market power that provides the balance of the city's needs.

Electric Supply Resources in 2012



Renewables already make up the bulk of CPAU's supply portfolio. The utility buys renewable energy certificates to offset the market power portion. (Artwork by City of Palo Alto Utilities)

Palo Alto layered on renewable energy contracts, starting with two large wind purchases that were signed in 2004 and began delivering renewable energy in 2005 and 2006. Several more long-term contracts have been signed to bring CPAU's new renewable generation to 35 percent by 2015. "After that, we will be negotiating to reach 50 percent, as long as we can stay within the RPS annual rate impact limit of .5 cents per kilowatt-hour (kWh)," Ratchye said.

### IT'S ALL IN THE PLANNING

Renewable acquisitions alone are not enough to turn a city carbon neutral. The Climate Protection Plan set short-, medium- and long-term goals to reduce GHG emissions citywide and identified the steps to reach them.

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# COMMERCIAL CUSTOMERS FIND HAPPY ENDING WITH BWP ENERGY SOLUTIONS

A movie studio that has warmed the hearts of millions and brought smiles to children's faces around the world will be a little cooler this summer and smiling about energy savings, thanks to Burbank Water and Power (BWP).

Energy Solutions, the municipal utility's commercial incentive program, provided The Walt Disney Company with a \$23,810 rebate to upgrade the inefficient old air-conditioning system at its California central cooling plant. The replacement Carrier Evergreen chiller will save Disney almost 500,000 kilowatt-hours (kWh) in the first year alone. That's enough energy to power about 80 Burbank homes for a full year—pretty magical when you think about it.

The Energy Solutions program has been making energy savings dreams come true for Burbank businesses for more than eight years, but magic has nothing to do with it. Program funding comes from California's Public Benefits Charge, which allocates 2.85 percent of the customer's total electric charges to support energy-efficiency programs. BWP will spend \$475,000 in rebate monies this year to incentivize customers who retire their inefficient equipment to install new equipment that exceeds California's Title 24 energy standards. BWP Account Manager

Alfred Antoun pointed out that new equipment and systems are usually more efficient than the ones they replace. "The goal of the program is to get customers to go that extra mile," he said. "That's where they are going to get the significant savings."

## SPREADING AROUND

The incentives target the usual suspects that run up commercial electric bills. Lighting is a perennial low-hanging fruit, and popular for its quick return on investment. BWP pays \$0.05 per kWh saved over a one-year period for lighting retrofits as well as for chillers, like Disney's. Rebates for heating, ventilation and air-conditioning systems and heat pumps are based on their efficiency rating on a three-tiered sliding scale. Other eligible systems include motor replacements, thermal energy storage, cool roofing, computer network power management software and custom projects.

The rebates are capped at 25 percent of the installed cost of the measure. Also, the individual customer's annual rebate total may not exceed \$100,000. Adding the annual cap was a way to extend the program to more participants, Antoun explained. Otherwise, large key accounts, with annual budgets and capital replacement schedules, would always beat smaller businesses to the first come, first served funding.

## DIFFERENT STROKES

The 40 to 50 businesses that participate in Energy Solutions annually are fairly evenly spread across BWP's commercial sector. However, marketing the program to customers that range from billion dollar businesses to mom-and-pop establishments is a continuous challenge, Antoun admitted.



**BWP Key Accounts Manager John Joyce presents The Walt Disney Co. with a \$23,810 check on Dec. 3. (Photo by Burbank Water and Power)**

Selling energy-efficiency measures to the biggest accounts is not the hard part. "They have facilities managers, or even whole teams, trying to reduce the company's energy use, and they are always talking to their key account representatives," Antoun said. "In Disney's case, their operations personnel worked with us early in the chiller replacement process to determine the prospective energy savings and reserve the rebate monies."

Small businesses, on the other hand, rarely talk to the utility before they undertake a project. Those customers have more in common with homeowners, in that they replace equipment as needed instead of planning months or years out.

To reach small commercial customers, BWP uses bill stuffers, newsletters, ads in the Chamber of Commerce newspaper and, recently, local contractors. "They are usually the customer's first point of contact when the business wants to replace equipment," said Antoun. "A contractor who is aware of the incentives can encourage the customer to go for the more efficient model."

*See ENERGY SOLUTIONS, page 3*

## 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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**ENERGY SERVICES**  
Western Area Power Administration

## Carbon-free *from page 1*

Resource planners will immediately recognize the strategies: Rebates for energy efficiency upgrades, a generous solar incentive (and a new feed-in tariff), a voluntary green power premium program and the RPS. These measures enabled the city to reduce emissions by 42,968 metric tons of CO<sub>2</sub>, or 10 percent below 2005 levels. Having exceeded its 2009 and 2012 goals, Palo Alto is updating its long-range emissions reduction goal of 15 percent below 2005 levels by 2020. This would avoid 119,140 metric tons of CO<sub>2</sub> and bring the community in line with state emission reduction goals.

Demand side management plays a critical role in freeing Palo Alto from carbon-intensive resources. The utility submits an update of its 10-year Energy Efficiency Plan to city council every three years. The 2010 update more than doubled the energy-efficiency goals of the previous report. The goals are also aimed to meet state mandates requiring efficiency resources as the first choice in evaluating utility supply options.

California continues to raise its energy-efficiency standards for buildings and appliances, and that pushes

utilities to work harder and spend fractionally more to achieve energy savings. CPAU's leveled cost of electric energy efficiency in 2010 was \$.05 per kWh, compared to \$.056 in 2012. Its annual report points out, however, that compared to new renewable energy purchases, the city is still getting a bargain. "The state law only allows us to claim the energy savings above the standards, but the upgrades still produce savings," added Ratchye. "And those are significant."

### YOU CAN DO IT TOO

Admittedly, Palo Alto's location helped its quest to become carbon neutral—being in a state with high standards for sustainability, policies to support efficiency and renewables and an abundance of alternative energy sources has its advantages. Also, as a built-out community, Palo Alto anticipates little load growth, although a new large businesses coming to the area could increase demand.

None of that should keep other cities from striving to reduce GHG emissions, though. The Carbon Neutral Plan is designed to be transparent, sustainable and repeatable by other communities. The first step, Ratchye advised, is to get the city council's buy-in, and then agree on the definition of carbon neutral. "Once you have

that definition, you can move forward," she said.

To measure Palo Alto's GHG emissions and verify reductions, the city council chose the outside, independent The Climate Registry (TCR) Electric Power Sector Protocol. "It was important to adopt a standard that would have meaning to other entities and that they could use as a reference," stated Ratchye.

Under the protocol, the city will achieve carbon neutrality on an annual basis. The system allows the utility to bank RECs from one year to the next, and to calculate the emissions from renewable energy sources so that those, too, can be offset. "That's critical, because some renewables, such as geothermal energy, may have modest amounts of emissions," Ratchye explained. "You have to account for those if you claim to be truly carbon neutral."

Make no mistake, the City of Palo Alto wants to be truly carbon neutral and hopes other cities will follow its lead. As Bruce Hodge, founder of Carbon Free Palo Alto, noted in the city's press release, "By taking this first step of de-carbonizing its electricity supply, Palo Alto has established itself in the vanguard of forward-thinking communities." ⚡

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

## Energy Solutions *from page 2*

He added that most small businesses applying for rebates report that they learned about the Energy Solutions program from their contractors.

### GOOD CAN GET BETTER

Large or small, those projects add

up to big savings—6 million kWh annually—and make up a big portion of BWP's annual state-mandated conservation goals. BWP's internal goals for electricity savings have remained largely stable over the life of the program, but that doesn't mean sitting on its laurels. "We are working on developing customer plans with our large key accounts," said Antoun. "That will give them a road map to achieve deeper savings."

He acknowledged that helping

small business customers reduce their energy use will continue to pose a challenge. "They tend to be hamstrung by tight budgets and issues like building ownership," Antoun observed.

But BWP won't stop trying to bring energy savings to all their business customers. The title of "Happiest Place on Earth" may be taken, but the city of Burbank can still work toward being the most energy efficient. And that will make a lot of people happy. ⚡

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

# WESTERN OFFERS SCHOLARSHIPS TO 2013 UTILITY ENERGY FORUM

Professional development is a great investment in a tough economy, and getting a little discount on it is even better. With that in mind, Western's Energy Services is once again offering \$100 scholarships for first-time attendees to the Utility Energy Forum (UEF), May 15 to 17, at Granlibakken Resort in Tahoe City, Calif.,

For 33 years, utility industry professionals from California, Nevada and the Pacific Northwest have gathered at UEF to discuss energy efficiency and renewable energy programs that address customer needs and environmental issues. From the beginning, Western supported this unique showcase of the latest trends in the energy utility industry and encouraged customers to attend. Starting in 2010, we added the

incentive of five \$100 scholarships to those who had never experienced this low-key, high-quality opportunity for networking and information exchange.

"Energy Services' mission is to help Western customers manage their resources as effectively as possible," explained Energy Services Manager Ron Horstman. "If we can get program managers and resource planners together to share ideas and experiences with colleagues from the same region, that's a great investment for Western, too."

## LOTS TO LEARN

There is plenty of experience—and perspectives—packed into this year's agenda. The learning begins with a pre-forum conference for utility and government participants. The informal

discussion will cover such hot topics as social media and electric vehicles.

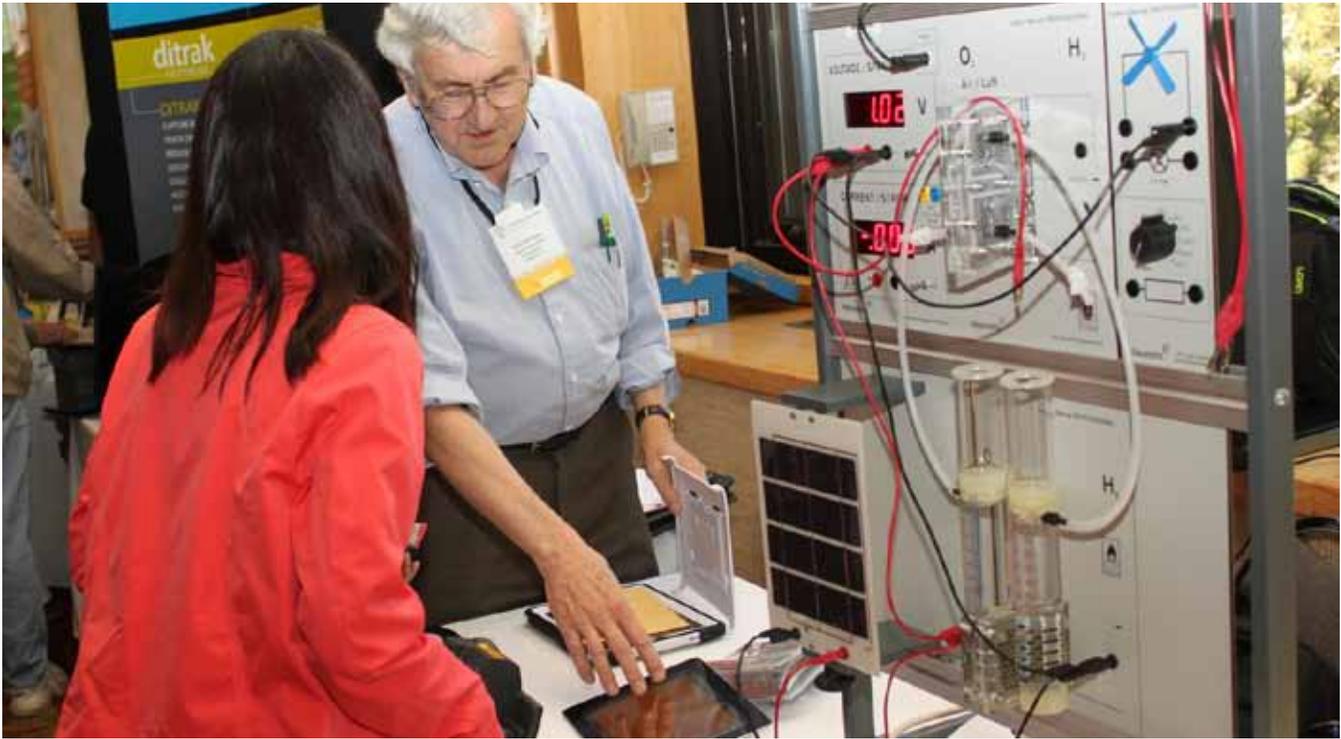
The keynote presentations focus on getting customer buy-in on programs that will not only increase their satisfaction with their power providers, but also help utilities meet environmental goals and mandates. Sessions will highlight policy and legislation, customer service and technology. Panelists will include experts from business, academia, government and, most importantly, utilities. That means you—the UEF is about everyone speaking up and weighing in on issues that affect us all.

As information-packed as the sessions are, the biggest opportunities may occur during meals, receptions and after hours. That's when attendees

*See UEF SCHOLARSHIPS, page 5*



Energy Services Manager Ron Horstman (left) explains Western's "Smart App" poster during the poster session, another opportunity for networking and exploring new ideas at the 2012 Utility Energy Forum. (Photo by Utility Energy Forum)



Equipment Loan Manager Gary Hoffmann demonstrates the program's fuel cell display to an attendee at the 2012 Utility Energy Forum. Western customers who have never attended this event may be eligible for a scholarship from Energy Services. Read more. (Photo by Utility Energy Forum)

meet, mix, mingle and get to know each other. Every year, attendees make valuable contacts, form partnerships and connect with others who have faced the same challenges and found innovative solutions.

Of course, not all challenges are the same, and it can be educational to find out what's going on in another region. Scholarship recipient Bill Stacy, general manager of Electrical District 3 in Maricopa, Ariz., noted that the 2012 sessions focused more on renewables than he expected. "California has a much more aggressive renewable energy policy than Arizona, so it was interesting to hear what the California utilities are doing to meet their mandates," he said.

"Also, I was surprised at how much the utilities are doing with social media," Stacy added. "Even if we aren't using those tools yet, it's good to have met people I can call for advice when the time comes."

### COULDN'T BE EASIER

Scholarship applicants don't have to jump through hoops to take advantage of Western's offer. "We believe the Utility Energy Forum is a great value for our customers, so Energy Services works hard to make it easy to apply," said Horstman.

To be eligible, the applicant must be an employee of a Western customer and have never attended the event. Your utility doesn't even have to be located in the Sierra Nevada Region, though if it is, you will be more likely to meet attendees from your area.

Call your Energy Services Representative now, and tell them you are a first-time registrant for the UEF and would like a scholarship. That's it. Of course, there are a limited number of scholarships, so the sooner you act, the better.

### GOOD FOR US

We are not entirely unselfish in our motives, because Energy Services will be well represented at the event. The more customers who attend, the more of you we get to meet. This is our chance to talk to you face to face, and learn more about your needs and concerns, and how Energy Services can help you.

It is also your chance to buttonhole one of us, and let us know what's on your mind. Ask Horstman about calculating demand-side management in your integrated resource plan; suggest a new diagnostic tool to Equipment Loan Manager Gary Hoffmann; or tell Energy Services Bulletin Editor Kevon Storie (me) about this great new program you started that should be on the front page of the monthly newsletter. We promise we'll listen—in fact, we are looking forward to it. See you in Granlibakken! ⚡

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

**T**echnological advancements in commercial building construction over the last decade have made it easier to design a building that uses up to 30 percent less energy than a code-prescriptive building. A building's design, construction and operation all contribute to this outcome. But to realize deep energy savings, the building owner should involve a commissioning agent from concept through completion.

### START AT THE BEGINNING

Many people have the misconception that the commissioning agent's work begins when construction is completed—preparing the building to turn over to the owner and checking the equipment to make sure it runs properly. But building commissioning yields the greatest benefit when the agent gets involved pre-design, and stays involved throughout the project.

Having a commissioning agent on the team for the pre-design, design, construction and turnover phases has been shown to result in fewer contractor call-backs, reduced change orders and corrected problems at design stage. Scores of case studies analyzed by Lawrence Berkeley National Laboratory (LBNL) clearly attribute significant annual energy savings to the commissioning agent's efforts. Commissioning agents who are involved from the beginning can help resolve equipment deficiencies, improve energy performance and provide short-term monitoring for baseline documentation.

The building owner may be less than enthusiastic about hiring a commissioning agent, believing that another person on the work site who requires documentation will add unnecessary complication and cost to the project. Yet, contractors, design professionals and building owners consistently praise



National Institute of  
BUILDING SCIENCES

**The National Institute of Building Sciences recommends that building commissioners get involved during the building design when it is easier and less expensive to correct envelope deficiencies. (Artwork by NIBS)**

the efforts of the commissioning agents who have worked on their projects. In fact, studies by the Whole Building Design Guide (WBDG) found that every dollar invested in commissioning returns \$4 in savings.

### FINDING THE RIGHT ONE

A good commissioning agent will find and solve problems early in design and construction. When hiring a commissioning agent, look for one who knows how to:

- Document the owner's operational needs
- Plan the commissioning process
- Define the building systems' performance
- Ensure that the building operators receive proper training

Also, a good commissioning agent has expertise in each building system:

- Envelope
- Mechanical/HVAC
- Power
- Lighting systems and controls

Because of the many recent advances in each of these areas, agents often need and specialized training to properly evaluate these systems. Therefore, larger building projects may need more than one commissioning agent.

### THE PROCESS

ASHRAE Guideline 0: The Commissioning Process outlines the basic commissioning process. Supplemental guidelines are avail-

able for each building systems: envelope, mechanical/HVAC, power and lighting systems and controls.

Building Enclosure Commissioning Process BECx: NIBS Guideline 3-2012 is a guide for commissioning the envelope from the National Institute of Building Sciences (NIBS). According to NIBS Committee Chair Rob Kistler, the time to make a difference with the envelope is during design. Noting that fixing envelope deficiencies after the building is completely enclosed is next to impossible as well as very expensive, Kistler added that the most reliable means of achieving envelope performance targets is during design and installation.

### COMMISSIONING RESOURCES

With the sponsorship of the Energy Department, Portland Energy Conservation, Inc. (PECI) developed excellent resources for each phase of commissioning.

LBNL offers the largest database of commissioning case studies for new and existing buildings. Research places the typical cost for commissioning around 0.4 percent of the total construction cost for new buildings. This investment results in documented median energy savings of 13 percent.

Non-energy benefits that come from proper commissioning include meeting or exceeding construction schedules and cutting down on change orders and warranty claims. The commissioning process also improves indoor air quality, safety records, equipment life and building operator training. ⚡



WEBSITE OF THE MONTH:

## FOUNDATION FOR WATER AND ENERGY EDUCATION

Squeezed between budget cuts and testing standards, schools are constantly on the lookout for creative curriculum at little or no cost. Utilities can play the hero to science teachers in their communities by introducing them to the Foundation for Water and Energy Education. Not coincidentally, you will be giving future consumers a better understanding of the issues surrounding hydropower.

The Foundation works with the general public, opinion leaders, teachers, students and other interested groups to educate them about water and energy issues. Although the organization focuses on hydropower in the Northwest, much of the information applies to hydro projects in general. As a classroom resource, the website provides a well-researched and comprehensive exploration of our most widely used renewable resource.

### LESSONS AND MATERIALS

The story of how we use water to make energy touches on many subjects, from science and math to history and social studies. The education section is packed with resources to get the lessons started. The Foundation sells a renewable energy display and a Make-Your-Own-Hydropower kit, but many materials are free to download.

The Nature of Water Power is a free science curriculum for grades six through eight, written to the latest science standards. The complete package includes curriculum units, materials list, additional resources and an overview of hydropower in the Northwest.

Despite its region-specific title, the overview will fit into science classes anywhere. It covers the water cycle, how hydropower works, its place in the national energy portfolio, a quick

history of man's relationship with rivers and the need to balance the many demands on our rivers.

Users will find free posters titled Salmon Lifecycle, Penstock Pals and Water Cycle, all brightly colored illustrations of important concepts in the study of hydropower. The Timeline of Electricity, Hydroelectricity and the Northwest hits the highlights of man's discovery and development of electricity, and can fill in some knowledge gaps even for adults. The glossary covers everything from avoided costs to zooplankton, with stops in between for geology, engineering and agriculture terms.



[http://FWEE.ORG](http://fwee.org)

### TAKE A TOUR

The education page also has a link to dam tours, and this is where the website really excels. The interactive map of hydroelectric projects in the Northwest overlaps with Western's territory to show dams in California, Montana, Nevada, Wyoming and Utah. Click on the markers to learn about the dam's ownership, location, year it was commissioned and capacity.

The first tour is "Walk Through a Hydroelectric Project" that literally takes users through a dam piece by piece with graphics, pictures and videos. A cross-sectional infographic offers a look inside a hydropower generator.

The Fish Passage tour explains how dams are engineered to protect fish on their journey through spillways,

turbines, bypasses and fish ladders. Another video shows how juvenile fish sometimes catch a ride on a barge to a safe release place below a dam.

Wind is one of the Northwest's fastest growing energy resources, and the wind power tour shows how the region is integrating wind with water power. Links to Energy Department information about wind and renewable generators make the tour relevant to users outside the Northwest.

"How the Northwest Hydro System Works" may be a little too region-specific—and technical—for student audiences. However, "River to Power" covers issues that could be a part of any classroom discussion of hydropower. The nine-minute video looks at the history of water power, the water cycle, how hydropower is generated, benefits of water to various community interests and environmental considerations.

### POWER'S PRICE

The Foundation does not gloss over the fact that hydropower, like all energy generation, affects the environment. This section goes into depth about wetland ecology, the uses of the river and how human activity changes our environment. Although the focus is on the Columbia River Basin, the issues examined here are common to all hydroelectric dams in one way or another. Learning about the environmental impacts associated with all types of energy production can prepare students to make informed choices when they become ratepayers. ⚡