February 2019 Share Package
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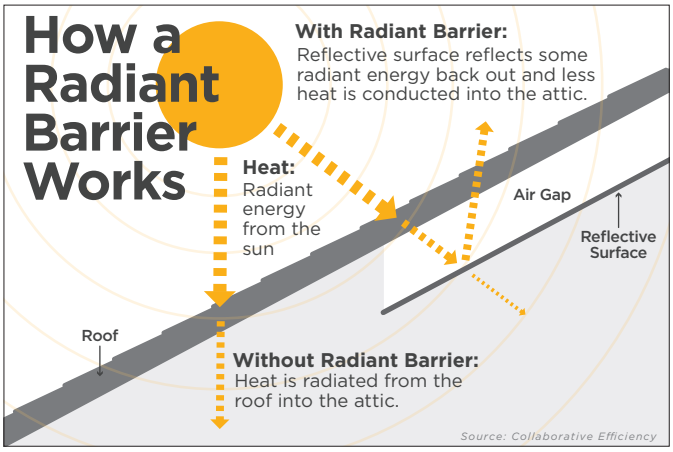
Do Radiant Barriers Make a Difference?



Radiant barriers reflect radiant heat.

Radiant heat barriers often look like aluminum foil. It only reflects radiant heat toward an air space of at least 1 inch.

Photo by RIMA

To ask a question, send an email to **Patrick Keegan** at energytips@collaborativeefficiency.com.

Q: *I've heard installing a radiant barrier in my attic could save money on my energy bill. What exactly is a radiant barrier, and does it make a difference?*

A: A radiant barrier reflects radiant heat. It can be used to keep heat inside during the winter and out in the summer. To understand the value of a radiant barrier, we need to consider the three different ways heat travels.

Convection. Air movement from hot to cold. This happens through openings in your home such as doors, windows, vents and air leaks.

Conduction. Heat traveling through solid material, such as the sheetrock and framing of your home. This can be minimized by insulation.

Radiant heat loss. The transfer of heat from the sun, or when a warmer material transmits infrared radiation to a colder material. Radiant barriers are designed to reflect this type of heat loss.

Radiant barriers often look like aluminum foil. Sometimes the foil is fastened to oriented strand board or foam board, but the foil will only reflect radiant heat toward an air space of at least 1 inch. If the foil is in contact with a solid material, it conducts excess heat into that material. A common location to apply radiant barriers is the attic. Radiant energy from the sun is sent back out of the roof before it can heat the air and insulation in your home. It is commonly sold as a roll of shiny, aluminum material and is usually mounted on the underside of the framing that supports the roof.

The radiant barrier is only effective at reflecting radiant heat, not as insulation or as a wrap to block air loss, but it can be very effective at its intended purpose. Even something as thin as a sheet of aluminum foil can reflect 95 percent of the radiated heat back through the roof if installed properly with an air gap between itself and the roof. While other solutions such as an attic fan try to remove the heat once it has accumulated, the radiant barrier stops the heat from building up in the first place.

The net impact of a radiant barrier depends on whether you live in a hot- or cold-weather climate. For example, homes that were retrofitted with attic radiant barrier systems in Florida were able to reduce air conditioning energy use by about 9 percent. In colder climates, the radiant barrier that reflects unwanted heat outside of the house in the summer will also reflect heat away from the house in the winter. In other words, the cooling bill may decrease, but the heating bill may increase.

So, is a radiant barrier in your attic a good investment? Sometimes. You need to do a little research, as savings vary in each situation and there are many inaccurate claims made about the cost savings they bring. In a warmer climate, a home with a large cooling load and a roof that is fully exposed to the sun, an attic radiant barrier could be a cost-effective measure, and it could make your home more comfortable.

Products are getting better all the time, but even then, your expectations need to be realistic. It's a good idea to compare an investment in an attic radiant barrier to other energy-efficiency investments, such as improving your attic insulation or sealing air leaks around doors and windows. Of course, the best way to compare your energy-efficiency opportunities is to schedule an energy audit of your home. Start by talking to the energy advisers at your local electric utility. ■

This column was co-written by Pat Keegan and Brad Thiessen of Collaborative Efficiency. For more information on energy efficiency, visit www.collaborativeefficiency.com/energytips.

Rolling Shutters Offer Efficiency, Security and Safety

A Roll-A-Way shutter covers a large picture window. When open, the small housing under the soffit is barely noticeable.

Q. My windows are still in good condition, but are not the most efficient. To improve efficiency, security and provide safety during storms, I might install rolling shutters. What should I look for?

A. Adding rolling shutters on the exterior of windows improves efficiency and offers security and storm protection. I installed one over a large glass window in my family room. During a severe storm last fall, the shutter protected my window from a broken tree branch and me from flying glass had it broken. I have a wood-burning fireplace in that room, so the shutter also saves energy during winter.

Energy savings from rolling shutters depends on the type of window glass and types of slat in the shutter. If your house has double-pane windows, adding the shutters will about double the insulation value of the windows. With single-pane windows, the percentage increase in efficiency will be significantly greater.

An additional energy savings can be realized during summer because rolling shutters also block direct heat from the sun's rays. The shutters can be lowered to any position to allow in only as much light (and heat) as you desire. When completely lowered over the window, they block nearly all light.

Rolling shutters are extremely strong and secure because they operate similarly to a rolltop desk. Narrow slats roll up into a box housing above the window. The ends of each slat slide in vertical tracks on each side of the window, making them secure and relatively airtight when fully closed. The slat itself provides insulation as does the dead air space created between the shutter and the window glass. In cold climates, this also reduces indoor window condensation problems.

If you want security and privacy along with light and ventilation, slightly raise the rolling shutter. The bottom of the shutter will not rise, but the slats will separate, slightly exposing the interlocking flanges between them. Many shutters are designed with narrow slots in the flanges to allow natural light and fresh air through.

Several materials are used for the slats: roll-formed metal, plastic or extruded aluminum. All are suitable for most areas. Extruded aluminum slats are the strongest and most expensive, and are often used on shutters for large windows. Roll-formed metal ones can be filled with foam insulation for higher efficiency and rigidity. Check local building codes for required materials and strength.

Where there is limited space above the window to the roof soffit, install a rolling shutter with compact single-wall extruded slats. A 6-by-6-inch box housing can accommodate a compact-slat shutter up to 83 inches in vertical length. The same size box can handle only a 57-inch shutter with regular-size slats.

Shutters using double-wall, foam-filled slats made of 0.43mm gauge aluminum require a larger box above the window. These are good for energy savings year-round. On south- and west-facing windows, select optional thermal reflecting paint. This is similar to the paint used on metal roofs for efficiency. It can keep the shutter and window 10 percent cooler than standard paint.

An important feature to consider is how the rolling shutter is opened and closed. Options are a pull strap, a strap crank, a crank handle or an electric motor. Keep in mind, if your shutters are inconvenient to use, you will not close them as often as you should for efficiency or security.

For smaller shutters up to 25 pounds, a pull strap is quick and inexpensive. A strap crank is functional for up to a 45 pounds. Large shutters and ones made from heavy-gauge extruded aluminum, up to 80 pounds, are easier to operate with a hand crank or an electric motor. Electric motor operators—some with automatic rain and heat sensors—are the easiest to install, but most expensive. ■

The following companies offer rolling window shutters: AC Shutters, (800) 745-5261, www.acshutters.com; Roll-A-Way, (877) 220-6663, www.roll-a-way.com; Rollac Shutters, (888) 276-5522, www.rollac.com; and Wheatbelt, (800) 264-5171, www.rollupshutter.com.

To ask a question, write to **James Dulley**, Energy Report, 6906 Royalgreen Dr., Cincinnati, OH. 45244, or go to **www.dulley.com**.

Save Energy With DIY Door Upgrades

Replaceable vinyl weatherstripping seals well on the hinge side of the door because it gets compressed with little rubbing and wear.

Photo by Pemko Manufacturing

The threshold under the door can be raised or lowered with a screwdriver so the door bottom weatherstripping seals tightly.

To ask a question, write to **James Dulley**, Energy Report, 6906 Royalgreen Dr., Cincinnati, OH. 45244, or go to **www.dulley.com**.

Q. *Our doors are old, inefficient and drafty. One is made of solid wood and one is metal. What inexpensive improvements can I make myself to increase their efficiency?*

A. People often do not realize how leaky an old door can be.

Check doors for leaks by moving a stick of lighted incense around the edge on a windy day. Observe the smoke trail for signs of leaky spots. If you cannot find leaky spots by watching the smoke trail, have someone shine a light from the outside. Leaky spots also allow more road noise to come through, so listen for the noisiest spots around the edge.

Leaky doors cost money in two ways. First, the cold air leaking in makes your heating system run longer to keep your house warm. Second, the draft—even if you do not notice it—makes you feel chilly. When feeling chilly, people often set the thermostat higher, which wastes energy.

There are ways to improve the efficiency of old doors, but don't immediately eliminate the possibility of installing a new one. Prices for some well-insulated steel and fiberglass doors—especially those without glass—are reasonable. They are efficient and easy to install.

Check for rotten wood by probing bad-looking spots on a wood door with a screwdriver. If a spot is more than a quarter-inch deep, it will be difficult to repair with wood filler. Place a long straight edge on the door to check for warpage. If the warpage is more than one-half inch across the door, installing new weatherstripping probably won't seal it.

Most metal doors have steel skins, so rust is a common problem. But it can be repaired. Rainwater often gets trapped at the bottom by the weatherstripping. Small rust holes can be filled with auto body compound. Drill several one-eighth-inch drain holes in the weatherstripping so no more water gets trapped.

On the wood door, the weatherstripping may compress over time. Push the door tightly closed to see if this helps. Install closed-cell foam weatherstripping if it must be replaced.

Metal doors use magnetic weatherstripping, so compression is not often a problem.

To fix leaks for a wood door, reposition the latch plate. Remove some wood in the door frame and move the plate back up to one-quarter-inch maximum. Drill out the old screw holes and fill them with a dowel rod. Drill new screw holes to secure the latch plate in its new position. Installing a stepped latch plate is another option to better compress the weatherstripping.

Check the condition of the hinges. Replace them if needed. If the hinges and pins get worn, the door will not hang square in the opening, which means it will not seal well.

There are many sizes of hinges, so take an old one along to the store and get an exact match. Don't just buy the cheapest hinge. A good-quality spring hinge is a good choice, but each may cost $15 or more.

It is almost certain the seal on the bottom of the doors against the floor threshold is worn. If it is not torn, adjust the floor threshold higher. There are several height adjustment screws across the threshold. They may be filled in with dirt from years of use, so poke around to find them. If the seal is bad, there are many generic replacement seals you can install.

Another option is an add-on retractable threshold seal, which is effective with carpeting by the door. It is mounted on the inside surface of the lower door edge. When the door starts to open, a pin against the door frame is released and the seal automatically lifts to clear the carpeting. It is easy to install and adjust. ■

The following companies offer door improvement products: Duck Brand, 800-321-0253, www.duckbrand.com; M-D Building Products, 800-654-8454, www.mdteam.com; Pemko Manufacturing, 800-283-9988, www.pemko.com; and Thermwell, 800-526-5265, www.frostking.com.

Quality Content, New Look Coming Your Way

Innovation, technology help motivate Ruralite Services Inc.'s communication efforts

When someone says "65," what immediately comes to mind? It's probably not the speed limit on many U.S. highways.

For most of us, 65 is synonymous with retirement—even if for most Americans, Social Security doesn't fully kick in until months or years later than the 65-year marker (not that I'm envious or anything).

Around the Ruralite offices, "65" has a different meaning—at least in 2019. Ruralite Services, the communications cooperative behind Ruralite magazine, Currents and Florida Currents, turns 65 this year.

Though we do celebrate the occasional employee retirement around here, we're looking at this milestone anniversary not as an excuse to look backward (at least not much), but as a chance to reflect on ways we can better serve our partner utilities and, you, their consumers.

Close followers of this space already know that in 2018 we conducted our first comprehensive readership survey in many years. That research, the study of national audience trends and feedback from our utility partners and our in-house experts are already informing changes into the look and content of the magazine you are reading right now. You may or may not have noticed our new approach to storytelling, the increased attention we're paying to digital magazine editions, the introduction of videos that add dimension to our articles and photographs, and a new approach to covers recently.

In 2019, those efforts will accelerate. New initiatives will be added to our already impressive to-do list. High among our priorities is the first extensive redesign of our magazines in about a decade. This effort won't be the equivalent of a fresh coat of the same color paint on your house. In addition to a more modern and accessible design for the magazines, we're going to carefully examine our standing features, our columns, story length and how we tell those stories.

The aforementioned research and feedback will be our guide for these changes. Our goal—as always—will be for our cherished readers to continue to be both informed and entertained by the eclectic mix of valuable utility information and stories and columns about your community, friends and neighbors.

Given that the results of our readership survey show most of our content is already amazingly popular, getting readers even more engaged and jazzed about each edition is a tall order. But it is an order our writers, editors and the communications pros at our partner cooperatives, utility districts and other publicly owned utilities are eager to tackle.

These changes come at a time of tremendous change in the energy industry. The advent of new energy sources, the increased attention to how energy production affects the environment and the exciting technologies that offer great promise for more efficient energy use are all topics worth exploring. You'll be reading more about on these topics on these pages.

Our job, as it has been for the past six-and-half-decades, will be to make these subjects clearly understandable and actionable for consumers.

As always, I hope you will not hesitate to let us know how we're doing. After all, listening to—and acting upon—your feedback has kept us relevant for almost 65 years.

You can communicate directly with us via email at feedback@ruralite.org, drop us a letter at the address listed on page 3 or send thoughts via the communications folks at your utility. We promise to listen. ■

Ruralite
SERVICES, INC

Michael Shepard is CEO of Ruralite Services Inc. and Efficiency Services Group in Hillsboro, Oregon.

Alaska Quakes Inspire Preparation

For many Alaskans, a 7.0-magnitude earthquake was a reminder to be ready

There's always a sense in the back of an Alaskan's mind that the earth may start to shake any second. With hundreds of small earthquakes every day—most not felt by people—complacency has a way of taking root and relaxing even the most prepared Alaskan.

That changed Friday, November 30, 2018.

I had just walked my two daughters, Joplin and Jolie, to the bus stop, leaving our house in Palmer through our garage and walking past the shelves with the emergency food and water we stored there years ago, but largely ignored.

We arrived at the bus stop at 8:25 a.m. in the dark and biting cold of an Alaska winter. The sun wouldn't come up for almost two more hours.

As we stood on the street admiring the stars and playing with our dog, Maple—our faithful bus stop companion—a rumbling sound like an overloaded freight train suddenly rose up. We all said it before the shaking started: "Earthquake!"

What we expected to be just another brief shake turned out to be anything but. When the quake hit, the earth moved violently, the rumbling growing almost deafening. Both of my girls grabbed ahold of me as I planted my feet and tried to remain upright while the earth tried its best to throw us down.

The ground just kept shaking.

We held on for nearly a minute as the 7.0-magnitude quake unleashed its energy. We watched as everything in front of us—houses, a neighbor's car, the kids at the other bus stop—was jolted from side to side. Car alarms started blaring in the distance. Lights flickered off and on.

Amidst it all, I became unsure of just what was going to happen to us.

Mercifully, the shaking finally stopped. But the crisis was not over. As we reached our driveway, a 5.7-magnitude aftershock hit, followed by even more aftershocks that sent Alaskans ducking for cover throughout the weekend.

When cellular service went down for almost 30 minutes, I had no way to contact my wife, Candace, to make sure she was OK and had evacuated her office safely. She did. With the schools closed, we all hunkered down at home for the day.

Friday night was spent awake, as aftershocks hit one after the other throughout the night.

We were lucky. Besides having items thrown from shelves, some glass from a shattered clock and rattled nerves, our home didn't sustain structural damage. The same cannot be said for hundreds of people in Eagle River and Anchorage, whose homes were split in half, cracked at the foundation or had the facades fall off. Amazingly, no one was killed during the quake.

Once things had settled down a bit, our family—and many other Alaskans—began to re-evaluate how prepared we are for "the big one." Now that we've been through it, how can we better position ourselves to react next time?

One of the biggest concerns I had after the quake was my house exploding due to broken gas pipes. Luckily, our pipes were fine. But it got me thinking that I did not have a tool at the ready to shut off my gas at the meter if necessary. To remedy this, we bought a crescent wrench of the correct size, which now hangs on a hook near the door to my garage, ready to grab at a moment's notice.

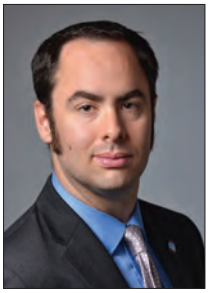
Gas wasn't the only concern. We were outside during the quake and not in any danger of a building collapsing on us. Had we been inside during the temblor, it might have been a different story.

We practiced what to do again: which table to go under, how to cover yourself with your pillow if the quake hits while you're in bed. Like tornado drills in the Midwest or fire drills at school, it's all about making it a routine—a reflex.

Most of all, we stressed staying calm. An earthquake is scary—especially to a child who might not comprehend what's going on. We talked to our kids frankly and openly about the quake, and stressed safety.

On New Year's Eve, a 5.0 aftershock hit. We all paused to see what was going to happen, then went back to what we were doing.

Now we have to make sure we don't become complacent again. ■



Michael Rovito is director of member and public relations at the Alaska Power Association in Anchorage, Alaska.

Rain is most often associated with hydropower, but snowpack keeps hydro facilities going strong during drier months.
Photo by Freepik

Hydropower: From Snow to Storage

The annual water cycle plays a significant role in energy production

When you think of electricity being generated from hydroelectric dams, you might first picture rushing rivers that spin giant turbines. The story actually begins on snowcapped mountains.

Hydropower is the conversion of flowing water into electricity. It is considered a renewable energy source, which means its fuel is replenished by nature—more specifically, the water cycle.

The water that drives the Northwest's hydroelectric generators comes from rain and snow farther upstream that falls within the Columbia River Basin, which is a vast area that begins in the Rocky Mountains of British Columbia and flows down through most of Washington, Oregon, Idaho and western Montana.

Rain helps keep the rivers flowing in winter and spring, but the melting snow carries us through dry summer months. The amount of snow that accumulates high in the mountains is called snowpack, and it is vital to the energy needs of the Northwest.

Knowing how much water is held in the snowpack any given year is critical to ensure enough fuel is available to meet the region's demands. Hydropower operators daily monitor the snowpack, temperature, precipitation, storms and droughts, as well as wind and solar energy outputs. This information helps them plan for near- and long-term energy availability for the Northwest.

Monitoring snowpack and streamflow requires collaboration from multiple agencies and teams. The U.S. Department of Agriculture, Natural Resources Conservation Service and National Water and Climate Center monitor the snowpack at 300 mountain sites across Oregon and Washington. This data is available online in near real-time.

The Bonneville Power Administration funds dozens of streamflow gauges to help monitor river levels, and several

temperature and precipitation sensors in remote locations where snowpack is particularly important for hydropower generation.

Snowpack is monitored either by manually sampling the snow with an aluminum tube and weighing it or by automated remote stations equipped with a device called a snow pillow. A snow pillow looks like a trampoline hooked to sensors to weigh the snow.

The automated stations also measure other weather conditions such as temperature, wind speed, relative humidity and precipitation.

Forecasting the volume of streamflow from snowpack levels is critical and challenging. The depth of the snowpack varies year to year, as does the rate at which it melts. Warming winter temperatures mean more precipitation will fall as rain instead of snow, changing the snowpack and streamflow.

Summer flows depend on water in storage reservoirs. Following dry winters with little snowpack, it may be difficult to refill the reservoirs, and there may not always be enough water to meet all demands on the system.

The region's hydropower operators work together to make the best use of storage reservoirs and maximize the power output to maintain reliability across the Northwest.

Just as animals gather and store food in times of abundance for leaner months, hydropower operators store water during wet months to prepare for drier conditions. Squirrels may opt for underground storage, but hydropower operators store water above ground behind hydroelectric dams in large pools called reservoirs.

Not all dams have reservoirs, but hydropower system operators work together to make the best use of the available storage and release water to meet multiple needs year-round.

Reservoirs act like giant batteries that provide energy when needed. Hydropower operators release stored water in the reservoirs behind the dam to generate electricity. They adjust the amount of water flowing through turbines to match electricity use. Power forecasters determine how much electricity will be needed during a given time and communicate that to hydropower operators.

Recreation is one of many benefits created by reservoirs.

Photo by Jakob Owens

While operations change depending on conditions, reservoirs generally are drawn down in winter and early spring to provide power and make room for heavy spring runoff. As snowpack melts in April through August, water is stored to prevent flooding and keep communities safe.

Water stored in reservoirs can help hydropower operators support the seasonal needs of both young and adult salmon. In winter and spring, operators help ensure salmon spawning grounds have enough water for spawning and to keep their nests covered.

Releasing stored water helps other wildlife, such as lamprey eels, which are an important cultural resource for some Northwest tribes.

The consistent availability of hydropower helps support other, more variable types of renewable energy sources such as wind. Dams can quickly ramp up to provide more electricity when the wind drops and can scale back generation when the wind picks up again.

Reservoirs also allow barges to move up and down the river, carrying all sorts of materials—from grain to wood chips to garbage. Wheat is transported from Idaho and Washington to Oregon and even overseas. Barges on the Columbia River move almost half of all wheat from the United States.

The reservoirs created behind dams are also popular places for recreation.

Operating the Columbia River hydropower system to support all of these needs is quite the balancing act. The storage capacity of reservoirs is critical to its success. ■

Source: The Bonneville Power Administration

General Foreman Javin Lackey's crew replaces a transmission pole at night during a scheduled Bonneville Power Administration outage to reduce member outage time.

CPI 2019 Projects

System work will improve reliability and keep member costs low

In 2018, CPI crews installed more than 250 distribution and transmission poles, 200,000 feet of overhead conductor, 85,000 feet of underground cable and a new substation transformer.

These system improvements increase the reliability and capability of the distribution system, reducing the number of outages members may experience and overtime costs associated with corresponding repairs. These types of projects have a direct impact on rates, helping to keep them affordable over the long term.

Continuing with this proactive approach, here are some of the larger projects happening throughout our service territory in 2019.

Oak Creek New Transmission Distribution Rebuild

In a multiyear improvement project for north Corvallis, we are adding 7,400 feet of new transmission line from Oak Creek Substation to West Hills Substation. When completed, this will create a loop feed between the Oak Creek, Philomath and West Hills (NE Philomath) substations, enhancing reliability to all members living near those areas.

Alsea Area Overhead to Underground Conversion

CPI will partner with Pioneer Connect to install 7,500 feet of underground distribution and fiber optic cable. When completed in 2020 the new underground line will allow increased load carrying capacity to feed the Alsea Valley and Waldport from our Philomath Substation. Joint efforts with Pioneer Connect have proven to be cost effective and an efficient use of both organization's resources.

Above, Foreman Brad Jarmain's crew replaces a pole on Reservoir Road, near CPI's Philomath office. Above left, Foreman Aric Williamson's crew performs work in the Harrisburg area as part of the 2018 system improvement plan.

Harrisburg Distribution Re-conductor
This re-conductor project consists of moving an existing line from an area difficult to access to county right-of-way next to the road and installing larger poles and wire. The existing line is at capacity during peak use times and the project allows for continued load growth in the Harrisburg area.

Underground Cable Injection
Underground cable will be reconditioned using an insulating fluid injection system. This method has proven to be a cost effective way to prolong the life of underground cable meeting certain criteria, such as minimal corrosion on neutral wires and an unobstructed path for fluid to flow through wire strands, splices and connectors. Successful cable injection prolongs the life of underground cable up to 40 years.

Underground Cable Replacement
Underground cable sections installed during the 1970s are in need of replacement. These sections are prioritized by number of faults, impact to members and difficulty to repair. The focus will be to replace the areas that cannot be refurbished with cable injection. Most of the replacement this year will take place in rural areas scattered across our service area.

These are just a few of the projects demonstrating CPI's goal of providing safe, reliable and affordable electricity to our members. ■

CPI Employee Holiday Giving

For the 2018 holiday season, CPI employees partnered with ABC House to support children in high-need situations in Benton and Linn counties.

The items that ABC House requested and employees provided were tasty snacks and drinks, board games, cleaning supplies and other office materials for the staff and kids to use.

This was a special way for employees to demonstrate their cooperative spirit and commitment to the community.

Rate Redesign, Phase II

Energy charge decreases and facilities charge increases to ensure equitability

By Jeff Beaman

Changes appearing on your February Central Electric bill reflect the second of five phases in Central Electric's rate redesign program. Launched in January 2017, the redesign gradually changes a long-standing rate structure commonly used by electric utilities. The redesign is driven by shifts in consumer choices and ensures equitable sharing among co-op members of the costs to operate the utility.

Each odd-numbered year through January 2025, co-op members will see a slight decrease in the kilowatt-hour energy charge offset by a slight increase in the monthly facilities charge (see table). The changes are revenue-neutral for the cooperative, meaning there is no direct financial gain or loss for the co-op due to the changes.

This raises the question: Why was the redesign program undertaken in the first place? The answer is to address imbalance in the cost recovery method dating back to the earliest days of electric utilities, including CEC, that if not changed creates inequity in the way members are billed.

Electric utility bills traditionally blended all of the utilities' costs into the kWh energy charge. This combined the fluctuating costs of energy use with the stable costs of operating the utility and delivering the energy.

This standard practice adopted in simpler times offered convenience to both utilities and consumers. Unfortunately, it created the consumer perception that the cost of everything the utility provided them was defined solely by how much electricity they used and paid for.

Over time, individual consumers' electricity use has become diverse. For example, some members have all-electric homes. Others use natural gas for cooking or heating their water and living space. Energy-efficiency technologies and behaviors vary among homes. Some members have added rooftop solar panels.

Because it costs the same to deliver electricity to every home, continuing to have all costs recovered through the kWh energy charge creates an unequal sharing of the utility operating costs by members.

The fairest approach—endorsed by the co-op members who served on the Rate Design Advisory Committee in 2016 and approved by the cooperative's member-elected board of directors—gradually separates the fluctuating costs billed to members for the electricity they use from the more stable costs of operating the utility. These stable costs occur regardless of whether a single kWh of electricity is sold. They include the buildings, vehicles, equipment, billing systems, computers and personnel required to operate the utility around the clock. ■

Central Electric's board of directors, senior management team and members of the co-op's rate design advisory committee listen as manager of project evaluations for EES Consulting Steve Andersen, standing, reviews results of CEC's cost-of-service analysis in September 2016. The analysis detailed what it costs the utility to provide service and how those costs are allocated among residential, industrial, commercial and irrigation accounts. The committee made a recommendation to the board of directors for redesigning the co-op's rate structure. The board approved it later that month, implementing the first phase in 2017.

Residential Members Rate Redesign Details

	2017	2019	2021	2023	2025
Facilities ($/month)	$15.92	$19.38	$22.84	$26.30	$29.75
Energy Charges (cents/kWh)*					
April – October	7.69	7.42	7.14	6.85	6.55
November – March	7.41	7.15	6.89	6.61	6.32

Tables showing the rate redesign details for commercial, irrigation and industrial customers can be seen at www.cec.coop/rate-redesign.

CEC Rate Increase Likely in 2020

Wholesale rate increases in 2017 and 2019 and capital improvement projects necessitate a rate increase

By Jeff Beaman

Last year's expansion work at the Sisters Substation by CEC lineman Boone Wagner is an example of the kind of project needing capital investment during the next 10 years.

As shown in the table on page 28, the 2019-20 kilowatt-hour energy charge is a reduction from the 2017-18 level. Future years' rate projections do not include the potential for increases due to the Bonneville Power Administration's wholesale rate increases. Such BPA increases along with Central Electric's need to increase investment in its electrical system in 2020 will likely require a rate increase next January.

BPA announced its next two-year power contract with its 127 public utility customers, including CEC, will include a wholesale rate increase effective October 1, 2019. The final amount will be determined this summer, but BPA has preliminarily identified an average 2.9 percent wholesale power rate increase and an average 3.6 percent transmission rate increase. Along with a 5.4 percent wholesale electricity rate increase in September 2017 that Central Electric did not pass through to members, BPA's charges continue to drive up CEC's wholesale electricity costs.

Additionally, CEC must significantly increase its investment in the co-op's electric system, fortifying reliability and safety. The planned capital expenditures of approximately $113 million from 2020 to 2030 are an increase of more than 80 percent in the amount invested during the past 10 years. This increased investment will be funded through a combination of direct inclusion in rates and increased borrowing. The plan is driven by a combination of factors, including:

- Replacement of aging or outmoded electrical infrastructure, focusing on replacement of aged underground cable and power poles and upgrades to the transmission system.
- Upgrading electrical system infrastructure facilities to serve growing demands for electricity in Central Oregon, fueled by population growth and existing members' demands.
- Increased safety and resiliency standards for the cooperative's electrical system as members' reliability expectations increase and portions of the system require enhanced protection against hazards.

"We have done a remarkable job of getting the greatest efficiency possible out of all of the components that make up our electrical system," says CEC President and CEO Dave Markham. "This has been a major reason that we've been able to keep rates well below national and state averages and those of Pacific Power. However, a number of system components are nearing the end of their lifespan— some of them not well suited for our microprocessor-reliant society and economy. Replacement components are significantly more expensive than the older equipment—something all of us have experienced when we replace old appliances and cars, or take on home improvement projects.

"Our capital investment program already addresses such activities as the replacement of aging power poles and portions of our underground power lines. With a system that encompasses 5,300 square miles served by nearly 4,000 miles of power lines and 24 substations that's valued at more than $241 million, we have a responsibility to make sure we are keeping it in the best possible condition—not for just today but well into the future." ■

Busting Myths About 'Smart Meters'

By Tom Tate

By now, most Americans likely have heard of the smart grid. This phrase is used to describe the computerization of America's electrical infrastructure. The purpose of this computerization is to improve the reliability, efficiency, resiliency and security of the electric grid.

A key component of the smart grid is advanced metering infrastructure, known in the utility world as AMI. AMI systems use digital meters and computer technology to measure electric use at homes and businesses more precisely than was possible with analog meters. Digital meters communicate via radio or existing power lines, and have been loosely termed as smart meters.

AMI technology benefits electric co-op members with greater accuracy in billing, faster outage restoration, operational savings versus manual meter reading and detailed data that you and your co-op can use to manage electric use more accurately.

Unfortunately, a number of myths have developed through the years concerning smart meters. These myths can fall into three categories: privacy concerns, security and health effects.

Coos-Curry Electric Cooperative takes great pains to keep your information private. That information includes the details of your electric use. The only people who see that data are co-op employees and you. Your co-op will not release this information to anyone else without your specific permission. The myths are that the data collected can tell when you are home or away, exactly what you are doing when you are there and that this data is given to the government.

Naturally, the data will show when you are home because, for most families, energy consumption is higher then. Having said that, current smart meter cannot identify what activities are taking place down to the specific appliance in use. This myth is unfounded.

What about the myth that these meters make the electric grid less secure by providing an avenue for hackers to break into systems through the smart meter and wreak havoc? While hackers continually attempt to break into electric systems, their focus is at higher levels in the operation.

AMI meters, also known as smart meters, benefit electric co-op members with greater accuracy in billing, faster outage restoration, operational savings versus manual meter readings and detailed data you and your co-op can use to manage electric use more accurately.

Hacking a meter is unlikely for a variety of reasons. Hackers like to work remotely via the internet, and smart meters don't offer that option. Radio-based smart meters require the hacker to be nearby to catch the weak communication signal, break the proprietary communication protocol and be there for an extended time to collect the short burst of data sent. Therefore, smart meters are an unlikely and unprofitable target for hackers.

Finally, there are myths surrounding smart meters and ill effects on health. These concerns state that having the radio-based smart meter is the equivalent to having a cell tower attached to the side of your home. Again, this is unfounded. Smart meters communicate intermittently for as few as five minutes a day. These devices are regulated by the Federal Communications Commission. Their output is well below the levels this federal agency sets. As one doctor observed, the radio waves emitted are more like those of a cordless phone or wireless router. Radio waves emitted by smart meters are much weaker and less frequent than other sources we use on a daily basis.

We all benefit from the continued development of America's smart grid, and can rest easy with the knowledge that the rumors surrounding radio-based smart meters don't hold water. ■

Phone Scams Target Members

Coos-Curry Electric will never ask for your account information over the phone

A scam targeting utility consumers continues to reach members of Coos-Curry Electric Cooperative. Thieves posing as utility customer service agents are trying to defraud our members of money and steal personal information.

"We have published information in past issues of this magazine, on our website and on social media in response to members receiving telephone calls that were not authorized by our cooperative," says Marketing and Member Services Manager Jacob Knudsen. "But it's important that we continue to inform our members that this scam is real and our community has been a target."

It works like this: Using the threat of being without heat or electricity in the cold, scammers impersonate a utility company employee and call unsuspecting members telling them they have past-due power bills and are in jeopardy of being disconnected unless they make a payment immediately using a credit card or call a special number to buy a prepaid card. The caller also provides a callback number and will answer the phone disguising himself as CCEC. Most recently, the scammers have begun targeting businesses.

The scammer threatens to shut off the power if he does not receive payment within several hours.

If the electric consumer makes a payment or calls the special number to obtain a prepaid card such as Green Dot, thieves not only have your money—which often is untraceable—but could have access to your personal information.

For this to work, scam artists count on scaring a member into suspending common sense and paying out large amounts of money quickly.

"They are good at creating a sense of urgency so there's no time to stop and think," Jacob says.

As consumers become savvier, scammers are getting more sophisticated. The fraudsters on the phone know what a typical bill amount is for the type of business they are calling and they use "spoofing technology" to make it appear the call is coming from CCEC or elsewhere in Oregon. This helps them be convincing when speaking with members, and it is difficult for law enforcement to stop.

When tracing the phone number on victims' caller ID or the number the victim is asked to call back, authorities find most lead somewhere overseas.

Unfortunately, such brazen schemes are not uncommon and have been reported across the country, even making national headlines.

Encouragingly, CCEC is hearing from people in our communities who have heeded our warnings. Many members have let us know they were contacted by someone demanding money and they did not fall for the scam.

In the Brookings area, one business owner informed us he received a fraudulent call. He told the crooks he was not going to fall for their scam. The scammers response was in essence "we may not get you, but we'll get someone." Unfortunately, this is true. We have received reports of losses to these conniving thieves.

Our mission at Coos-Curry Electric is to keep informing and educating our members until this scam is obsolete.

"We have always urged our members to be wary about giving out personal information, including credit card numbers, unless they are certain they know the identity of the person calling them," Jacob says.

Member service representatives at CCEC will always have account information when discussing a member's account.

"If you have any doubts about who is calling you, tell the person you would prefer to call back using one of our published telephone numbers or the number for our after-hours call center," Jacob says.

The FTC Advises to Report Scams

If you spot a scam, please report it to the Federal Trade Commission. Report a scam online, www.ftc.gov/complaint, or call the FTC at 877-FTC-HELP (877-382-4357) or TTY 866-653-4261. Your complaint can help protect other people. By filing a complaint, you can help the FTC's investigators identify the imposters and stop them before they can get someone's hard-earned money. It really makes a difference.

Below are guidelines for avoiding scams from the Federal Trade Commission:

- **Spot imposters.** Scammers often pretend to be someone you trust. Don't send money or give out personal information in response to an unexpected request—whether it comes as a text, a phone call or an email.
- **Don't believe your caller ID.** Technology makes it easy for scammers to fake caller ID information, so the name and number you see are not always real. If someone calls asking for money or personal information, hang up. If you think the caller might be telling the truth, call back to a number you know is genuine.
- **Don't pay up front for a promise.** Someone might ask you to pay in advance for things like debt relief, credit and loan offers, mortgage assistance or a job. They might even say you have won a prize, but first you have to pay taxes or fees. If you do, they will probably take the money and disappear.
- **Consider how you pay.** Credit cards have significant fraud protection built in, but some payment methods do not. Wiring money through services such as Western Union or MoneyGram is risky because it is nearly impossible to get your money back. That is also true for reloadable cards (MoneyPak or Reloadit) and gift cards (iTunes or Google Play). Government offices and honest companies do not require you to use these payment methods.
- **Talk to someone.** Before you give up your money or personal information, talk to someone you trust. Con artists want you to make decisions in a hurry. They might even threaten you. Slow down, check out the story, do an online search, consult an expert—or just talk to a friend.

This scam tends to come in clusters. All of a sudden, members get a bunch of calls, then it quiets down for a while. Restaurants and mom-and-pop stores are popular targets, especially during the winter because they do not want to lose their heating or refrigeration.

"These reports about identity theft scams seem to be occurring more frequently and thieves are becoming more creative" says General Manager/CEO Brent Bischoff. "It is unfortunate there are so many instances of dishonest people targeting the unsuspected." ■

Understanding the Need for Debt

West Oregon uses debt to improve its infrastructure and upgrade delivery

By Scott Laird

Questions have been raised recently about the large amount of debt West Oregon Electric Cooperative carries, the amount of annual interest the co-op pays to maintain that debt and why WOEC has no plan to become debt free.

Debt in the utility industry isn't just a common occurrence, it is a necessary tool that a co-op such as WOEC must use to fund needed capital investments to maintain the integrity of the system and keep the lights on for its members.

"Every electric utility that I've ever worked at has carried some debt," says

WOEC General Manager Bob Perry.

According to WOEC's business model the co-op operates as a not-for-profit corporation, earning $8 million to $12 million in revenues annually for the past decade. WOEC has about $19 million in debt. That debt is money the co-op has borrowed from lenders. The cost of that debt is the interest paid to borrow that money.

Debt allows the co-op to manage cash flow while acquiring or constructing new assets, and maintaining and upgrading the delivery system—what is called capital investments.

We have a plan to manage our debt," says WOEC's Finance Manager Dan Huggett. "Things in a utility system constantly deteriorate and wear out and are in need of replacement. We bring on new debt as we retire old debt. We're a business. That's how businesses work."

While some people might think this is unsustainable, WOEC always will be acquiring debt and paying it off. It's part of the business model.

"If we aren't constantly doing upgrades and system improvements, then we're just kicking the can down the road," Bob says. "And that's what was happening in the past. This is how we provide reliable service—by doing system improvements in a timely manner."

WOEC uses debt in a similar way a person might pay for large purchases.

When you buy a new home or car—or need to replace a large appliance such as a refrigerator—you pay with a credit card or take out a loan or mortgage rather than pay with cash. You pay off the purchase for months or years, paying interest for the privilege of owning and using the new item while paying it off.

An electric utility is a natural monopoly with a dedicated revenue stream. The expectation is the entity will outlive its current management, board and many of its members.

"We have to borrow the money, otherwise it comes directly from the ratepayers," Bob says. "There is no reason for a member to pay today for a substation or other system upgrade that is still going to be here and working decades from now. We can't ask our members to fully pay for something today when they may not be here to use it in 10 or 20 years."

In a typical electric distribution system, including WOEC, capital investments are paid for with approximately 40 percent of the funding coming through the rates customers or members pay each month. Sixty percent is paid for with acquired debt.

All utility systems are constantly in need of improvements and additions to their infrastructure, whether it's large upgrades to substations, increasing membership and service areas, building a new headquarters or buying new equipment. Debt is acquired for these work projects, and debt is paid off over time. It's a constant turnover.

Examples of Current Debt

WOEC is in the process of rebuilding the distribution line from Mist to Vernonia with new poles and wires. The total cost for this project is budgeted at $2.5 million, or approximately $555 for each of WOEC's roughly 4,500 members.

This and many other current or proposed work plan projects—such as burying lines, replacing poles or removing substations—are designed to improve the overall reliability of the system and reduce outages.

"Just like a car that you finance, you're going to have maintenance on it," Bob says. "You may pay it off at some point, but eventually you're going to have to replace it. Most likely you're going to finance it again."

Construction projects following the flood in Vernonia in December 2007 are another example of projects that needed to be financed. Co-op management recognized the need to move both the local substation and headquarters building, both of which were damaged. After emergency assistance from the Federal Emergency Management Agency, construction of those two projects totaled $5 million. The previous headquarters had also flooded in 1996 and 2011.

"Construction of the new headquarters was completed in 2012 after the idea was presented to members and approved by the majority who responded," Dan says. "It replaced the old building on Maple Street that was built in 1956. There aren't many other going businesses that have grown the way we have over 60 years that are still in the same old facility."

The choice is whether to pay for such projects by adding the cost onto each member's bill to pay for it before starting, or borrowing the money and paying it off over several years.

"It makes sense from a business standpoint, and from the standpoint of our members, to finance it and spread out the payments," Bob explains.

Another recent major project was burying the transmission line along Highway 26 from Timber to Elsie. That project cost around $6 million.

Dan says WOEC, like other rural electric utilities, accesses funding for capital investment projects through the National Rural Utilities Cooperative Finance Corp., known as CFC, or through the U.S. Department of Agriculture's Rural Utilities Service.

"We really don't have the option of paying for millions of dollars in improvements up front, nor can we ask each of the members to pony up their share of the cost for those improvements each year," Dan says. "We also have to keep our system in working order and up to a certain standard."

Members have entrusted management and the board of directors to manage the system for them.

"Our purpose is to ensure you enjoy the benefits of reliable electric service," Bob says. "That's our mission. That's our responsibility as management, and that's the responsibility of the board. We take that responsibility very seriously." ■

From left, linemen Dana Jackson, Siaosi Panapa and Jarod Anderson.

MORE
THAN POLES AND WIRES. IT'S AN INVESTMENT.

If you've driven on Petzold Road near Crow lately, you might have noticed these new square-shaped poles that our crew installed last fall. These are called glulam poles and they were made locally in Oregon. They are expected to last two- to three-times longer than traditional round poles.

This project was an investment in your future. New poles and wires mean greater reliability for your homes and businesses.

It's also innovation. Here at Lane Electric Cooperative, we are innovating to bring you the best the industry has to offer and the most reliable service possible.

We are invested.
We are innovative.
We are MORE POWERFUL TOGETHER.

LANE ELECTRIC
A Touchstone Energy® Cooperative

Shattering CVEA Hydroelectricity Records

Since 2013, CVEA has steadily increased hydropower generation, making it a bigger and growing part of the Co-op's generation portfolio. Another record was set in 2018, producing 65,996,900 kWhs of hydro, shattering previous hydro production records of nearly 57,500,000 kilowatt hours.

For the second year in a row, water was not the only thing flowing out of Allison Creek; benefits to the Membership also came rolling out of the project. Spring came late to the service territory and breakup was slow. Thankfully, Allison Creek came to the rescue providing an additional 6.5 megawatts of electricity. This enabled the Solomon Gulch Hydroelectric Project to run only one turbine in the spring and allow Solomon Lake to fill and prepare for summer generation requirements.

Throughout the summer, Allison Creek and Solomon Gulch worked in conjunction to supply all of CVEA's energy needs. According to CVEA COO Travis Million, "now in the Allison Creek project's second full year of operation, I believe we are starting to figure out the most efficient way to operate both of the plants together. This accounts for some of the increased output." Increased summer loads accounted for a small amount of additional hydro production, and Mother Nature, of course, played a big role. For the first time in history, CVEA continued to generate with 100 percent hydropower into mid-December, extending summer generation by roughly two months.

Prior to Allison Creek, the reduction in available water for hydro generation typically forced CVEA to begin running the diesel or cogen plants mid October.

Although it is not a guarantee that summer generation will continue into December or that generation records will be broken every year, CVEA is pleased with the recordbreaking results in 2018. The Co-op will continue to work with local consumers and Mother Nature to use available water efficiently and maximize hydro benefits to members.

If you have questions on this topic, contact Sharon Scheidt at 907-822-5506, 907-835-7005, or email scheidt@cvea.org. If you are interested in details regarding either hydro project, visit cvea.org. ■

From left, David Burt, Mike Gardner and Barbara Trout are sworn in at the January Tillamook PUD Board Meeting. David and Mike are serving their first terms on the board.

Tillamook PUD Welcomes New Board Members

Mike Gardner and David Burt join the board

By Joanna Stelzig

In November, two new board members were elected to the Tillamook PUD Board of Directors. Mike Gardner will represent Subdivision No. 4 and David Burt will represent Subdivision No 2. They join Barbara Trout, who was re-elected, and Harry Hewitt, and Doug Olson on the board.

Mike is a lifelong resident of Tillamook County. He left to attend college at Portland State University and returned to work and raise a family with his wife of more than 44 years, Cindy.

"One of my biggest accomplishments is my family," Mike says.

Through the years, Mike has served the community in a variety of ways. He was a teacher in both the Neah-Kah-Nie and Tillamook school districts, and has owned and operated a number of local businesses.

Mike is always on the move, taking multitasking to another level. At one time, he taught school in the Tillamook School District, owned the local Body and Sole sports shop and worked at Whiskey Creek Hatchery.

He has since retired, but still keeps moving and continues to be involved in the community.

"I am looking forward to helping the utility grow for the future and continuing to strengthen the connection with the community," Mike says.

He says he is most looking forward to helping make the utility competitive and reliable for the community.

"We have to grow for the future, and be smart as well," he says.

Mike recognizes challenges can arise with every new venture.

"Forming synergy within the board, working together and getting to know each other might be a challenge at first, but I am excited to do this," he says. "I know there are going to be things that I don't know, but I am comfortable being able to adapt."

Though some challenges lie ahead, Mike brings a unique perspective and skills that will be useful tools while on the board.

Mike Gardner

David Burt

Powerful Fun Fact

Did you know Tillamook PUD operates with a five-person board of directors? Each Director is elected to represent a different section of the Tillamook PUD service territory. For more information and to see which board member represents your area, visit tpud.org/aboutus/board.

"I have been on both sides of the public and private sector, so I have an understanding of how things work on both sides," he says.

For Mike, working with high-risk youth in the public school system taught him a lot about communication and life skills. Teaching students how to communicate effectively through controlling their emotions and implementing conflict resolution has made a huge impact on him.

"It's amazing how it changes you and how you see the way you interact," he says.

Joining the PUD board has been a dream for Mike.

"I have always wanted to do this," Mike says enthusiastically. "I have a fascination with this industry. Where I am at in my life now has prepared me for this. I'm ready."

David is a fourth-generation Tillamook resident. His grandfather, Orville Johnson, was one of the first Tillamook PUD Board members.

For more than 30 years, David and his wife, Jenny, opened their hearts and their home to youth as foster parents. During this time, they raised 77 daughters—an experience he says has prepared him for a multitude of situations.

In addition, David owns and operates South Prairie Store and South Bound Storage.

Community is very much a part of David's life. His deep care for the community and desire to help out in any way he can drove his him to join the board of directors.

"It's all about kids and community," David says.

He is a proponent of carrying on a family tradition of community involvement. He watched his relatives before him take pride in and care for the community, and he wants to do the same.

David is most looking forward to continuing growth and strengthening the PUD's ties with the community. He wants to maintain a strong connection and be open and transparent.

"I don't want anybody to think they can't come talk to me about anything," David says.

He says the employees and community are his passion, as well as keeping the ratepayers' best interests in mind. He says these aspects are equally important to him and will be a focus while serving on the board.

One challenge David sees ahead is tackling the incredible learning curve.

"It will take time to get up to speed and be where the current board members are at," he says, noting that learning as much as he can is his first goal.

David brings with him a broad range of experience and skills that will be helpful in his new position. As president of the South Prairie Water District and a member of the South Fork Prison Camp board for many years, David gained valuable board operations experience. His varied community involvement provides him with a range of experience.

David has been involved in everything from revitalizing the Tillamook Boosters Club many years ago to recently organizing and heading-up the Tillamook County Pioneer booth at the fair.

When talking about the future, David hopes to "be a positive influence and make a difference in the decisions that impact the ratepayers and the company," and continue to serve the community in a different manner. ■

For more information about our board of directors and for a list of board of directors meeting dates, go to www.tpud.org.

Meet MEC

Marlboro Electric Cooperative is your local electric co-op with employees who live and work in your community, just like you. Our Meet MEC section introduces the "power" behind your power—dedicated employees working behind the scenes to provide you with safe, affordable and reliable electricity. Thank you for giving us the opportunity to serve you!

Name: Nicky Jacobs
Position: Service crew foreman
Time with MEC: 5 years
Favorite thing about MEC: Working in the bucket
Hobbies: Nicky likes to camp with his family. His favorite camping trip was in Chimney Rock, North Carolina. He also enjoys playing sports with his children and coaching them in basketball, baseball and soccer.
Favorite movie: "Death Wish" because it is full of action and suspense.
Favorite Superhero: Nicky says Superman has been his favorite superhero since childhood.
Inspiration: "My family is my greatest inspiration because they motivate me to provide and care for them."
Personal: Nicky has been married to his wife, Jennifer, for 14 years. He has two girls and a boy: Berkeley, Beckham and Bowdrey.
Best advice received: "Keep your head up and be strong!"