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Energy Efficiency
Tip of the Month

Routinely replace or clean your air conditioner’s filter. Replacing a dirty, clogged filter can reduce your air conditioner’s energy consumption by 5 to 15 percent. Source: energy.gov

Forecast and COSA in Place—Rate Design Analysis Next
By Arleen Boyd & Bill Pascoe, Risk Management Committee Co-Chairs

The BEC Cost of Service Analysis (COSA) is complete and approved by the board with no recommended rate changes. Prepared by EES Consulting, the COSA shows current rates delivering revenue to meet BEC budget requirements through 2020.

A COSA examines revenue requirements and documented costs. It calculates the costs of providing service to customer classes based on load and service requirements so that utilities can allocate revenue requirements fairly across the classes. BEC has five customer classes: residential, small commercial, large commercial, industrial, and irrigation. The Risk Management Committee recommended COSA approval following examination of cost assignments to each class for purchased power and transmission, distribution, customer services, shared services, and co-op financial obligations.

COSA calculates the ratio of the revenue produced by a class of customers to the cost of providing all energy and services to the class. A ratio ranging from 90 to 110 percent typically indicates that a class is paying its fair share. Four of the BEC customer class ratios are close to 100 percent using two calculation approaches recommended by our consultant. The irrigation class exceeds 90 percent using one approach but shows 75 percent using a 100 percent demand approach. The BEC Board will consider the irrigation ratio after completing its committee rate design review and examining data from the new BEC meters to accurately confirm power usage and costs across classes. Adjusting the rate for the small irrigation class (7% of total BEC sales) would have little impact on rates for other classes.

COSA determines how much revenue is needed. Rate Design determines how the bills are structured to collect it. The Board’s Risk Management Committee has begun rate design research, and EES is prepared to help compare our current rate structure to alternative approaches. Typical rates cover costs with a base rate, energy rate, and, often, a demand rate based on maximum use. BEC will look at options for setting cost-based, fair, understandable rates that provide stable revenue for the co-op and stable rates for members.

Financial forecast in hand, the BEC forecast model is back in service. Working with the National Rural Utilities Cooperative Finance Corporation BEC will review a completed multi-year financial forecast in July and post it on the website. By August, we will be using the forecast model to support what-if scenario analyses for rate design and equity management alternatives. The forecast model allows us to see potential financial impacts before making decisions.

As always members are encouraged to attend risk management and board meetings where these issues will be examined.

Access the 2020 COSA & Summary of Results on our website at www.beartoothelectric.com.
HOW DO YOU USE ELECTRICITY?

By Kaaren Robbins, Member Communication & Services

Many factors affect electricity usage such as family size, season, personal habits, etc. How you use electricity directly affects the total of your monthly bill. Every appliance or electronic device you use is reflected in your monthly energy bill, but some of those devices are costing you more than others. Do you know which ones? Below, we’ll help you determine and control the energy hogs in your home by using four easy steps.

Why go through the effort? By figuring out the biggest energy hogs in your home, you can adjust your usage—and lower your bill—by unplugging or simply using those devices less. Remember: Even small adjustments can help whittle down your energy expenses.

Calculating the energy cost of a specific device is fairly simple. You only need two numbers to get started: the device’s wattage and the number of hours you use it per day (this can be an estimate or you can keep a log).

How can I find the wattage of a device?

Most devices have a label listing how many watts they use. You can find this wattage label either on the device (usually on the bottom or back) or in the owner’s manual.

If you can’t find the wattage label, there are a couple other options to determine how much power the device uses.

1. Use a wattage measuring device. BEC offers the Kill A Watt®, which displays the wattage of a device when you plug it in. You may borrow a Kill A Watt meter from the BEC Red Lodge Office. Just stop by to check it out and take it home for 30 days of wattage measuring fun.

2. Contact the manufacturer with your device’s model number.

On the next page is a list that shows the common wattage of everyday household devices. Though the wattage of your particular device may vary, it should give you a rough estimate.

How to calculate a device’s energy cost in 4 easy steps

**STEP 01** Calculate Watts Per Day
In this step, simply multiply your device’s wattage by the number of hours you use it in a day. This will give you the number of watt-hours consumed each day. For example, say you use a 125-watt television for three hours per day. By multiplying the watts (125) by the hours used (3), we find that the television is consuming 375 watt-hours per day.

125 watts X 3 hours = 375 watt-hours per day

**STEP 02** Convert Watt-Hours to Kilowatts
Electricity is measured in kilowatt-hours (kWh) on your bill, not watt-hours. One kilowatt is equal to 1,000 watts, so to calculate how many kWh a device uses, divide the watt-hours from the previous step by 1,000. Using our previous example, this means you would divide 375 watt-hours by 1,000, resulting in 0.375 kWh.

375 watt-hours per day / 1000 = 0.375 kWh per day

**STEP 03** Find Your Usage Over a Month
Now that you know the kWh used per day, multiply that by 30 to find your approximate usage for the month. So, if your daily usage is 0.375 kWh, your monthly usage would be 11.25 kWh.

375 watt-hours per day X 30 days = 11.25 kWh per month

**STEP 04** Figure Out the Cost
For the final step, refer to your last electric bill to see how much you pay per kWh, i.e. your electric rate. Let’s say, according to your bill, your electric rate is 8.8 cents per kWh. Multiply your electric rate ($0.088768) by your monthly usage (11.25) to find out how much your TV is costing you in a month ($1.00).

11.25 kWh per month X $0.088768 per kWh = $1.00 per month
What are common wattages for household appliances?

The wattages of appliances or other electronic devices can vary. Typically, older appliances use more energy while newer models are more efficient. ENERGY STAR appliances are among the most efficient. We suggest to always look for the ENERGY STAR label when purchasing new appliances.

According to the Environmental Protection Agency, here are typical wattage levels of everyday devices.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>WATTS</th>
<th>COST PER MONTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee maker (1 hr per day)</td>
<td>900 - 1200 watts</td>
<td>$2.40 - $3.20</td>
</tr>
<tr>
<td>Microwave (1 hr per day)</td>
<td>750 - 1100 watts</td>
<td>$2.00 - $2.93</td>
</tr>
<tr>
<td>Toaster (10 min per day)</td>
<td>800 - 1400 watts</td>
<td>$0.21 - $0.37</td>
</tr>
<tr>
<td>Oven (1 hr per day)</td>
<td>1000 - 5000 watts</td>
<td>$2.66 - $13.32</td>
</tr>
<tr>
<td>Dishwasher (4 hr X 10 days per month)</td>
<td>1200 - 2400 watts</td>
<td>$4.26 - $8.52</td>
</tr>
<tr>
<td>Washer (4 hr X 4 days per month)</td>
<td>350 - 500 watts</td>
<td>$0.50 - $0.71</td>
</tr>
<tr>
<td>Dryer (4 hr X 4 days per month)</td>
<td>1800 - 5000 watts</td>
<td>$2.56 - $7.10</td>
</tr>
<tr>
<td>Iron (1 hr X 4 days per month)</td>
<td>100 - 1800 watts</td>
<td>$0.04 - $0.64</td>
</tr>
<tr>
<td>Ceiling fan (24 hrs per day)</td>
<td>65 - 175 watts</td>
<td>$1.38 - $3.73</td>
</tr>
<tr>
<td>Water Heater (1.5/3 hrs per day)</td>
<td>4000 watts</td>
<td>$15.98 - $31.96</td>
</tr>
<tr>
<td>Space heater (24 hrs per day)</td>
<td>1200 - 1500 watts</td>
<td>$25.57 - $31.96</td>
</tr>
<tr>
<td>Hair dryer (10 min X 20 per month)</td>
<td>1200 - 1875 watts</td>
<td>$0.21 - $0.33</td>
</tr>
<tr>
<td>Incandescent Light bulb (1 bulb @ 12 hrs per day)</td>
<td>60 watts</td>
<td>$0.26</td>
</tr>
<tr>
<td>CFL Light bulb (1 bulb @ 12 hrs per day)</td>
<td>12 - 17 watts</td>
<td>$0.13 - $0.18</td>
</tr>
<tr>
<td>LED Light bulb (1 bulb @ 12 hrs per day)</td>
<td>6 - 9 watts</td>
<td>$0.03 - $0.04</td>
</tr>
<tr>
<td>Laptop (12/24 hrs per day)</td>
<td>50 watts</td>
<td>$0.53 - $1.07</td>
</tr>
<tr>
<td>Computer monitor (12/24 hrs per day)</td>
<td>150 watts</td>
<td>$1.60 - $3.20</td>
</tr>
<tr>
<td>Computer tower (12/24 hrs per day)</td>
<td>120 watts</td>
<td>$1.28 - 2.56</td>
</tr>
<tr>
<td>Refrigerator (24 hrs per day)</td>
<td>300 - 780 watts</td>
<td>$19.17 - $49.85</td>
</tr>
<tr>
<td>Television 19”-36” (24 hrs per day)</td>
<td>65 - 133 watts</td>
<td>$1.38 - $2.83</td>
</tr>
<tr>
<td>Television 53”-61” (24 hrs per day)</td>
<td>170 watts</td>
<td>$3.62</td>
</tr>
</tbody>
</table>

How much is that old refrigerator in the garage costing me?

You got it free. It’s awesome for keeping soda and beer cold, but what’s the annual cost?

Here are sample annual electricity cost calculations for a few old refrigerators with freezers on top (19.0 to 21.4 cubic-feet)*:

- 1990-1992: $283
- 1993-2000: $189
- 2001-2008: $118
- 2009-present: $90 (Energy Star)

If you have a refrigerator that dates back to 1992 or older, it might be worth your while to ditch it—or at least to upgrade to a more efficient model. An Energy Star qualified refrigerator today will cost about $90 annually in electricity.

*Your costs may vary due to model, location, temperatures, etc.

The Kill A Watt
Members—Check one out today for 30 days free usage

The Kill A Watt is an electricity usage monitor. It measures the energy used by devices plugged directly into the meter. Now available at BEC.
NYE, MONTANA—THE BUILDING OF A NEW SUBSTATION

On Wednesday, July 3 you may have seen NorthWestern Energy’s (NWE) temporary 100 kV transformer on its route from Butte to Nye. BEC’s new substation is part of NWE’s multi-phase project to upgrade rural transmission lines from 50kV to 100kV providing additional capacity for growth in Montana’s more rural Carbon and Stillwater counties.

The BEC Nye Substation temporary cut-over date is set for early August. “The permanent 100 kV transformer is on order from the manufacturer in Virginia,” stated BEC Line Superintendent Eric Elton. “Delivery is scheduled for October of this year. However, weather will play a significant role in the transit and implementation schedules,” continued Elton.

Affected BEC members will be informed of actual implementation outage dates via personal robo calls, the BEC website (www.beartoothelectric.com) and BEC’s Facebook page.

Project Calendar (subject to change)

- Early August: Cut-over to temporary 100 kV transformer.
- September: Permanent power line build out.
- October: Permanent 100 kV transformer delivery.
- October: Cut-over to permanent 100 kV transformer.

NorthWestern Energy (NWE) has filed with the Federal Energy Regulatory Commission (FERC) for a 53.8% increase in their Open Access Transmission Tariff (OATT), effective July 1. BEC takes delivery of its power supply through NWE’s transmission system at 10 delivery points (substations). Consequently, the proposed increase would impact BEC’s transmission delivery budget by approximately $250,000 per year. If approved in full by FERC, this increase would not directly affect rates charged to members, however the increase would decrease the annual margins available to be allocated to members. BEC has intervened with FERC on this matter and will continue to monitor and review the process and work with other impacted parties. BEC’s OATT intervener filing is available on BEC’s website (www.beartoothelectric.com) on the home page under News & Events.

As of July 1, FERC has approved NWE’s filing subject to refund after an extended hearing process where NWE will have to defend all objections brought forth by all of the interveners in the case.

Watch for further information on this subject as the hearing process proceeds.

July 3, 2019: The temporary 100 kV transformer arrives at the Nye Substation.