MEMORANDUM

TO: Council Members

FROM: Kevin Smit

SUBJECT: Energy Efficiency for Small and Rural Utilities

BACKGROUND:

Presenters: Kevin Smit, Manager of Power Planning Resources; Dave Moody, Manager of Planning and Evaluation, Bonneville Power Administration; Thomas Elzinga, Energy Services Manager, Central Electric Cooperative

Summary: Over the past several years, the Council has heard from small and rural utilities about the challenges of implementing energy efficiency. At the Council’s June 2023 meeting in Victor, MT, after hearing from several Montana utilities, Council members challenged staff to work towards solutions for addressing these barriers. This agenda item at the Power Committee is intended to continue that discussion. Staff will provide a summary of the challenges the Council has heard over the years and review some of the work the Council and its Regional Technical Forum have done to address these barriers. Next, Dave Moody from Bonneville will provide context from an implementation perspective on the challenges customers face and the drivers behind them, as well as highlight some success stories. Finally, Thomas Elzinga from Central Electric Cooperative will provide their perspective of implementing energy efficiency in a rural environment, highlighting what has worked well despite the challenges and what resources might further support implementation for these utilities. The goal of this session is intended to be a step towards finding solutions, whether directly by the Council or
through policy guidance, to address this long-standing challenge in the region.

Relevance: The Northwest Power Act identifies cost-effective energy efficiency as the priority resource for the region, and as such, this has been the cornerstone of the Council’s power planning since the beginning. Acquiring all cost-effective energy efficiency requires implementing efficiency measures in all areas of the region where cost-effective potential exists. While the region has been extremely successful in its development of energy efficiency as a resource, the region has and continues to face implementation challenges in rural utilities. The Council’s 2021 Power Plan recognizes these challenges and called on the region, including Bonneville, to support rural utilities in acquiring the cost-effective efficiency identified in the plan.

Workplan: A.1.1 Tracking and reporting on energy efficiency accomplishments relative to the 2021 Power Plan Conservation Program.

More Info:
- Energy Efficiency: Values and Challenges
- RTF Small and Rural Utilities Subcommittee Web Page
- 7th Power Plan MCS-1 – “Ensure All Cost-Effective Measures are Acquired” (see page 4-10)
Objective and Speakers/Presenters

• Objective for Today
  Review what we know about the difficulties that small and rural (SR) utilities have in acquiring energy efficiency, and what actions have been taken to address these concerns (so far) and begin discussing new ideas going forward.

• Presenters
  – Kevin Smit, Manager of Power Planning Resources
  – David Moody, Manager of Planning and Evaluation, Bonneville Power Administration
  – Eric Mullendore, EE C&I Sector Lead, Bonneville Power Administration
  – Thomas Elzinga, Energy Services Manager, Central Electric Cooperative
Challenges Faced by Small and Rural Utilities in Acquiring Energy Efficiency

- Insufficient contractor pool to support quality installations
- Insufficient staff to support EE implementation
- Significant drive times for staff, contractors, inspectors, etc.
- Other locational challenges
- Relatively homogenous customer base which limits potential
- Technical knowledge
- Limited availability of energy efficient products
- Increased costs in rural areas for equipment (both labor and equipment)
- Regional average baselines may not adequately reflect a small and rural service territory – i.e., local area EE savings could be higher than the regional average
- Difficult programs may be even more difficult for small and rural utilities (e.g., rental housing – split incentive)
- Lower cost-effectiveness threshold in the 2021 Plan
- ...and more

Council and RTF Small and Rural Utility EE Efforts

Regional Collaboration and Research

- EE Values and Challenges Paper
  - Describes the distribution of EE benefits among regional entities
  - Includes a section on challenges for small and rural utilities
- Under-Served EE Markets Assessment
  - Focus on participation rates of various demographics for identifying under-served EE markets
  - Includes some SR utility and rural customer data
- Regional Technical Forum
  - Small and Rural Subcommittee
  - Small and Rural Technical Needs Study (2012)

Council/Staff Roles - Assess EE potential, set targets, other actions in the Plan. Research and collaboration during implementation.

RTF Roles: Measure definition, tracking achievements
Selected RTF Measures Considered for the Small and Rural Utilities*

- Thermostatically Controlled Outlet for Pump House Heaters
- Energy-Free Stock Watering Tanks
- Stock Tank De-icers (inactive)
- Generator Engine Block Heaters
- Non-Res LED Wallpacks
- Res High Efficiency Central AC
- ENERGY STAR® Air Purifier/Dehumidifier
- Small Commercial DHPs
- Res/Com Duct Insulation
- Res Efficient Portable Spas
- Res Portable Spa Heat Pumps
- Residential Window Films
- Res ASHP w/Alternative Fuel Backup
- Res Well Pump VFDs

*These measures have a wide range of “status”; they may not all be currently available. E.g., a few have been deactivated, some are yet to be developed, others were considered but decided not to pursue.

Next up...Dave...then Thomas

There are a couple additional slides containing reference material...
### Reference Links

- Energy Efficiency Values and Challenges Paper
  - *Energy Efficiency: Values and Challenges*
- Seventh Power Plan MCS-1 – “Ensure All Cost-Effective Measures are Acquired”
  - 7th Power Plan MCS-1 – “Ensure All Cost-Effective Measures are Acquired” (see page 4-10)
- Regional Technical Forum: Small and Rural Subcommittee
  - RTF Small and Rural Utilities Subcommittee Web Page
  - Small and Rural Technical Needs Study 2012
  - Small and Rural Barriers Technical Presentation

### RTF Small and Rural Measure Tracking Sheet

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>RN</th>
<th>Sufficient Data Available?</th>
<th>Energy Savings Potential</th>
<th>Cost-Effective?</th>
<th>Applicable to Small/Rural Utilities</th>
<th>2019 Small Rural Recommendation</th>
<th>Action To Date</th>
<th>Completed</th>
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<td>Generator Engine Block Heater</td>
<td>Yes</td>
<td>Probability</td>
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CEC EE Challenges and Solutions

A Little About CEC

• Electric only cooperative with over 38k meters serving over 5,300 square miles.
A Little About CEC

- Our typical annual energy savings is around 2.5 to 3 million kWh, or .29-.34 aMW.

Service Class Breakdown

- Residential
- Irrigation
- Commercial
- Industrial

Challenge

- We, like many rural utilities, are a growing utility adding about 1,000 new services annually. We want to capture those new construction savings.
Potential Solution

- Ramping up our commercial new construction measures.
- Offering multi-family housing offerings with increased opportunities.
- Reviewing residential custom projects to reach those members.

Challenge

- Increasing need to reduce demand from G&T and on our distribution system.
Potential Solution

- Heat pump water heaters match our load profile.
- Looking into zero backup heat for heat pumps and incentives for backup heat lockout.

Challenge

- Market and baseline energy savings has increased dramatically to cause many measures to be determined as not cost effective. Now we have big EE budgets, very few measures to utilize and smaller rebate amounts.
Potential Solution

• We are reviewing BHERs.

• EV chargers – additional side benefit of local engineering review.

• Low-income programs – how they have expanded, but we need more help.

Challenge

• BPA continues to cut various support services that have aided utilities with small staff and little expertise.
Potential Solution

• This is currently a challenge that we don’t have a solution to, and it will hurt small, rural utilities.

• Trying to find other potential offerings that BPA can support utilities with.
Energy Efficiency in Rural Communities: Challenges and Opportunities
Rate Period at a Glance

- Nearly 2,600 aMW of energy efficiency acquired as a resource since 1982
- $127 million in incentives provided
- 80 aMW acquired in FY 22 and FY 23
- Nearly 2,600 aMW of energy efficiency acquired as a resource since 1982
## Savings Break Down

<table>
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<tr>
<th>Geography</th>
<th>Rural vs Urban</th>
<th>Sector</th>
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<tr>
<td>Washington</td>
<td>Small Rural 14.2</td>
<td>Industrial 30.5</td>
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<tr>
<td>Oregon</td>
<td>Non Small Rural 57.1</td>
<td>Commercial 19.1</td>
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<tr>
<td>Idaho</td>
<td>Non utility 9</td>
<td>Residential 17.5</td>
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<tr>
<td>Montana</td>
<td></td>
<td>Agricultural 3.4</td>
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<tr>
<td>Other (NEEA, CA, WY, NV)</td>
<td>9.2</td>
<td>Federal 3.2</td>
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<td></td>
<td></td>
<td>Utility 1.9</td>
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<tr>
<td></td>
<td></td>
<td>NEEA 5.7</td>
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BPA’s Energy Efficiency Program

BPA allocates an incentive budget proportional to load share.

Customers choose from a menu of measures or customer projects and receive EEI incentive payments.

BPA provides implementation support and performance payment funding.
<table>
<thead>
<tr>
<th><strong>Opportunities</strong></th>
<th><strong>Challenges</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer choice and local control</td>
<td>Requires staffing and engagement</td>
</tr>
<tr>
<td>Significant flexibility, no targets or penalties</td>
<td>Cost effectiveness and program constraints</td>
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<tr>
<td>Dedicated funding creates incentive for engagement</td>
<td>Local conditions can mismatch regional assumptions</td>
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</tbody>
</table>
How BPA Supports Implementation

**Funding and Implementation Support**
Small rural utilities receive augmented performance payment and field staff provide technical assistance to support project implementation.

**Economies of Scale**
Regional infrastructure creates economies of scale regional consistency that could not be created individually.

**Training and Workforce Development**
BPA provides training and engagement with the contractor community.

**Marketing support**
BPA offers support for utilities promoting their programs and engaging program participants.
Program Opportunities
Residential Efficiency

› Home Energy Reports
  › Digital and paper delivery
  › Increased customer outreach

› HVAC
  › Move to more efficient VSHPs
  › Explore cold climate HPs and other new technologies
  › Leverage other funding

› Water Heating
  › HPWH

› Weatherization
Low Income and Tribal

› Increased incentives keeping pace with the market.

› Incentives aim to cover full installation and repair costs.

› New attestation-based income verification option eases qualification burden.

› Incentives can be paired with other work supported by CAP agencies or others.
Agricultural Efficiency

› New agriculture audit measure to ease producer burden
› Traditional sprinkler and pumping measures
› Zonal variable rate irrigation
Utility Owned

› Offices and Warehouses
  › Lighting
  › HVAC
  › Weatherization
  › Custom Projects

› Distribution System
  › Transformers
  › Reconductoring
  › Transformer De-energization
  › Voltage reduction
Commercial and Municipal

› City Hall, Schools, Libraries, Fire Stations, Public Works Facilities
› Small commercial, grocery and local business
› Field support specialists can help connect utilities and contractors to offer support for program implementation
Industrial Efficiency

› Energy Smart Industrial provides specialized technical support and project facilitation for all

› Wastewater opportunities are available even in very rural territories

› Small industrial opportunities
Low Income

› Worked with several tribes to install high efficiency heat pumps as part of an engineering pilot program

› Oregon Trail Electric installed a CO2 HPWH installed that will deliver domestic hot water to a group of low-income housing units

› Central Electric Coop worked with BPA to install high-performance, high-capacity heat pumps in low-income members homes
Irrigation and Agricultural

- Okanogan Irrigation District to replaced three of their four pumps at its Shellrock pumping station
- Umatilla Electric Cooperative supported the installation of a dozen large pumps to irrigate 26,500 acres
- Benton Rural Electric Association installed variable speed circulating fans for the JK Family Dairy Farm
The city of Whitefish installed upgrades to its wastewater treatment facility and saved 570,000 kWh.

Ten Lumber Mills from Montana, Oregon, and Washington are engaged and a strategic energy management cohort with a collective goal of 6 million kWh in low or no cost savings.
Okanogan PUD and Oregon Trail Electric each saved more than 800,000 kWh in distribution system projects last year alone.

Smaller projects were completed in many rural areas including Fall River, Ravalli, Idaho County, and Yakima Power.
Custom Installations

› Jefferson County PUD worked with Pacific Seafood, located in the rural town of Quilcene, to upgrade lighting in their cultivation facilities.

› Clallam PUD EE helped Forks Community Hospital upgrade their chiller system, HVAC controls, and pump and fan system.
Summary

Success is possible and happening but requires engagement which can challenging for some smaller utilities.

Local conditions are often the most significant challenge in program implementation.

Cost effectiveness constraints significantly limit the measures available to rural customers.

BPA will continue support rural customers and seek creative solutions to address implementation challenges.