Northwest **Power** and **Conservation** Council

August 4, 2015

MEMORANDUM

TO: **Council Members**

FROM: **Charlie Grist, Tom Eckman, Tina Jayaweera, Kevin Smit**

SUBJECT: **Model Conservation Standards for the Seventh Power Plan**

BACKGROUND:

Presenter: Charlie Grist, Tom Eckman

Summary

Staff is seeking Council guidance on the Model Conservation Standards for the draft Seventh Power Plan.

The Power Act requires the Council to set forth a general strategy for implementing conservation measures and developing resources as part of the power plan. This includes Model Conservation Standards (MCS). The standards are intended to produce all electricity savings that are cost-effective for the region and are to be designed to be economically feasible for consumers, taking into account financial assistance from Bonneville and the region's utilities.[i]

Staff will summarize the purpose, requirements and implementation of the MCS along with an historical review of previous model standards adopted by the Council. The presentation will also summarize proposed MCS for the Seventh Plan. The proposed MCS was discussed at the June 24, 2015 Conservation Resources Advisory Committee (CRAC) meeting and the July 14, 2015 Power Committee meeting. A draft of the proposed MCS for the Seventh Power Plan was provided to Council members on July 29, 2015.

Purpose, Requirements and Implementation of the MCS

The model conservation standards are one tool available to help the region implement a plan to produce all power savings that are cost-effective for the region and economically feasible for consumers. The Regional Act outlines three areas that the MCS should include. These are model standards for:

- New and existing structures
- Utility, customer, and governmental conservation programs, and
- Other consumer actions for achieving conservation

Historically, the MCS have been focused on the first area - improving specific provisions of state building energy codes such as minimum insulation levels for new and remodeled buildings. The adoption of the MCS in 1983 Plan was a key factor in establishing the first significant building energy codes improvements adopted in Washington and Oregon. Over the years, subsequent model conservation standards have helped to advance the adoption of building efficiency standards adopted in all four states.

In addition to building codes recommendations, past MCS have also recommended standards for the design of utility, Bonneville, and state conservation programs. These program design standards contain specified elements to include in the design and operation of utility conservation programs to assure that all cost-effective conservation is achieved. Past MCS have also specified standards for buildings converting to electric heating or electric water heating such that all cost-effective electric savings can be achieved.

The MCS Surcharge

The Act also requires the Plan to include a methodology for the Administrator to impose a surcharge on customers in the event the Administrator determines customers have not achieved energy savings comparable to those that would be achieved under the MCS. Implementing a surcharge is a major undertaking with specific actions required of the Council and Bonneville under the Act. The surcharge is intended to be a cost-recovery mechanism for costs incurred on the electric system because projected energy savings attributable to MCS conservation measures have not been achieved. It should only be considered when there is a failure to achieve cost-effective MCS savings identified in the plan.

Bonneville has never had to implement a surcharge. Instead, typically either state building codes are revised or Bonneville and utility conservation programs are adopted to achieve equivalent savings. For example, in the 1983 Plan, the Council recommended that if the building energy performance standards for new homes in the Plan MCS were not adopted by states or local jurisdictions by 1986, then BPA should impose a 10% surcharge on utilities serving non-complying areas. The Council's action

was enough to spur Bonneville and utilities to offer programs until building codes were eventually changed so when the Council updated its plan, it removed its recommendation authorizing the Administrator to impose a surcharge.

Proposed Seventh Plan MCS

Model Standards for New and Existing Structures

For the Seventh Plan, staff is not recommending specific MCS provisions for state building code improvement for site-built homes and commercial buildings. This is because all four states have a well-functioning process for updating codes for new and remodeled buildings and many of the new construction measures expected to be cost – effective in the Council's Seventh Plan will likely be incorporated within the next rounds of state building code updates . However, it is imperative for the state code processes to continue to identify and adopt cost-effective improvements and for utilities to support the adoption of and compliance with cost-effective improvements in codes. The proposed MCS calls this out in the section on conservation program standards.

Model Standards for Conservation Programs

The Seventh Plan's model standards for conservation programs are similar to previous power plans' model standards. The model standards recommended for the Seventh Plan incorporate eight elements of program design. The elements include equitable distribution of benefits, cost-efficiency, economic feasibility for customers, targeting measures not anticipated to be developed by customers on their own, taking advantage of naturally occurring windows of opportunity, not creating lost-opportunities, consideration for environmental impact, and encouragement of adaptive management.

Staff recommends the Seventh Plan model standards for programs include more specificity on how programs can ensure adoption of all cost-effective conservation. Specifically, the model standard calls for utility, Bonneville and state conservation programs to:

- Improve acquisition of cost-effective conservation in hard-to-reach segments and underserved populations;
- Implement all cost-effective potential for voltage optimization on utility distribution systems and,
- Continue to work toward enhancing codes and standards.

With respect to improving acquisition in hard-to-reach segments, the proposed MCS calls for ensuring full participation in programs in order to assure all cost-effective conservation is acquired. The model standard would be accompanied by a proposed action plan item that calls for an assessment to determine if any customer segments are underserved and development of strategies to improve participation to reach proportionate participation levels for hard-to-reach customers or markets.

Implementing all cost-effective savings from voltage optimization on utility distribution systems in has been challenging for many regional utilities. The proposed MCS calls on Bonneville to assist its customer utilities to assess potential savings opportunities and develop programs or performance standards to acquire all cost-effective conservation identified in a reasonable timeframe. The model standard is also coupled with a proposed action plan item.

Finally, the value of cost-effective energy codes and appliance standards has been immense. But continued regional action is required for codes and standards to continue to produce low-cost energy savings. The proposed model standards require states and utility-funded programs, including NEEA, to continue to work together to develop conservation options that could be included in future code and standards updates. Five proposed action items identify Bonneville, utility, and NEEA actions for state building code development and implementation, federal and state standard development, and the creation of best-practice guides for emerging industries such as indoor agriculture and data centers where codes and standards do not now apply.

Model Standards for Conversion to Electric Space and Water Heating

Staff proposes to maintain previous plan MCS requirements for homes and businesses converting to electric space or water heat and for the design and implementation of all other conservation programs.

Review of Proposed MCS

Staff developed the proposed MCS and it was reviewed at the Conservation Resource Advisory Committee in June and by the Power Committee in July. In addition, several parties have submitted written comments on the draft proposals. The proposed staff recommendations were revised after considering the comments and incorporating input from the Power Committee and state staff. The draft action plan items associated with the model standards have been made more specific –a suggestion made by several members of the CR AC and other parties. Another issue raised by stakeholders and discussed during a meeting of the Power Committee and the CRAC was whether and how to develop specific model standards for low-income customer programs and develop specific designs for manufactured home programs many of which serve a low and moderate-income households.

The proposed MCS language on underserved customers is intended to cover not just low-income customers, or low and moderate-income households residing in manufactured homes, but ***all*** potentially underserved markets where cost-effective energy savings opportunities may not be being captured by current programs. The proposed MCS and associated actions plan items stop short of recommending specific solutions for either of these two markets in favor of first completing an assessment of all potentially underserved markets and then calling for the development of strategies to improve conservation program participation in specific areas only where problems are found.

Surcharge Recommendation

Staff does not recommend that any of the MCS be subject to a surcharge at this time. The Council's Action Plan will call for reporting on progress toward achieving the three items above. If there is insufficient progress toward reaching these goals, the Council may reconsider a surcharge recommendation to Bonneville.

Relevance The Model Conservation Standards and surcharge methodology are required elements of the Seventh Power Plan.

Workplan: 1D. Prepare for Seventh Power Plan and maintain analytical capability

Background: Meeting materials from the June 24, 2015 Conservation Resources Advisory Committee can be found here: http://www.nwcouncil.org/energy/crac/home/

More Info: Draft MCS Chapter was provided to Council members on July 29, 2015 and associated action plan items were sent on July 30, 2015. Both documents are also attached.

[i] [Northwest Power Act Sections 839b(e)(2), 839b(e)(3)(A), and 839b(f).

Model Conservation Standards and Surcharge Recommendations

Council

August 12, 2015

Northwest Power and Conservation Council

SEVENTH NORTHWEST POWER PLAN

What is the MCS?

- Section 839b(f)1 of the Power Act:

"Model conservation standards to be included in the plan shall include, but not be limited to, standards applicable to (A) new and existing structures, (B) utility, customer, and governmental conservation programs, and (c) other consumer actions for achieving conservation."

Northwest Power and Conservation Council

SEVENTH NORTHWEST POWER PLAN

What is the "SURCHARGE" Policy"?

- Surcharge is intended to be a cost recovery mechanism for costs incurred on the system
- The Council's Plan must contain a recommendation to the Administrator regarding whether a utility's failure to achieve MCS savings should be subject to a surcharge on all of its power purchases from Bonneville
  - "Such surcharges shall be established to recover such additional costs as the Administrator determines will be incurred because such projected energy savings attributable to such conservation measures have not been achieved;
  - Surcharges may not be less than 10%, nor greater than 50% of Bonneville's rate"

Model Conservation Standards – Decision Criteria

- The Act requires that the MCS be set at levels that:
  - achieve ***all regionally cost-effective power savings***; and,
  - that are ***economically feasible for consumers***, taking into account financial assistance that may be made available through Bonneville

The MCS - A Short History: Chapter 1

- Council adopted first MCS April 27, 1983
  - Established space heating performance targets for new electrically heated residences for three Northwest Climate Zones
    - Less than 6,000 Heating Degree Day (HDD)
    - 6000 – 8000 HDD*
    - More than 8000 HDD*
  - MCS requirements were 40% better than toughest existing energy codes in region
  - Recommended that MCS be adopted by January 1, 1986 or BPA impose 10% surcharge on utilities serving non-complying areas

*Now Zone 2 = 6000 – 7499 HDD, Zone 3 = 7500 HDD and greater

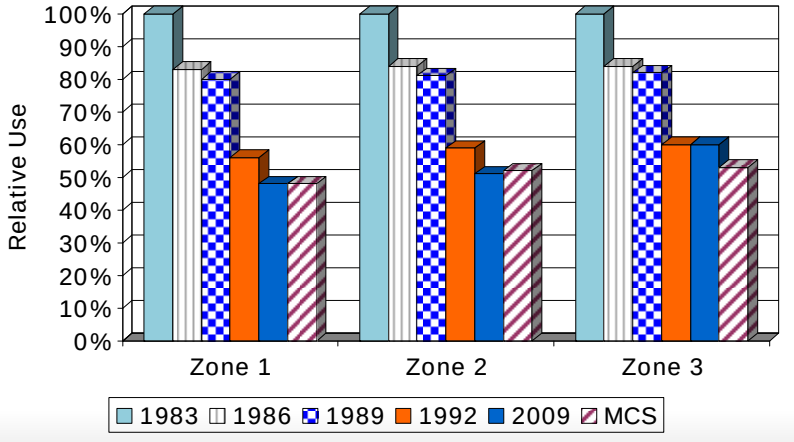
The MCS – A Short History: Chapter 2

- 1983 – 1991
  - Council sued by Seattle Master Builders contesting legality and level of the MCS
    - ***Conclusion – Ninth Circuit Rules for Council***
  - Utilities demand that Bonneville sponsor "R&D" project (RSDP) to test "cost-effectiveness" of MCS
    - ***Conclusion – Bonneville finds MCS cost-effective***
  - Bonneville, following Council's Plan, sponsors "early code" adoption and "energy efficient" new homes marketing program (Super Good Cents)
    - ***Conclusion – Tacoma adopts MCS, multiple WA and ID cities and counties follow . . .***

The MCS – A Short History: Chapter 3

- 1986
  - Washington State Legislator enacts state energy code that achieves about 50% of the savings called for by the MCS
  - Oregon Energy Conservation Board revises state energy code that achieves about 40% of savings called for by MCS beginning in 1987 and 55% beginning in 1989
- 1991/92 – Oregon and Washington update codes to near MCS levels
- 2009 – Idaho and Montana adopt codes roughly equivalent to MCS

The MCS – A Short History: Chapter 3a



The MCS – A Short History: Chapter 4

- Sixth Plan MCS included:
  - Recommendations for residential building codes with suggested minimum R-values
  - Minimum requirements for new commercial buildings, at least equivalent to current ASHRAE Standard 90.1
  - Cost-effective measure requirement for fuel conversion to electric space/water heat
  - Objectives for all other conservation programs

MCS – Next Steps

- What should the MCS be for the Seventh Plan?
  - Act provides for broad application
  - Focus on conservation program design
  - Keep all cost-effective measure requirement for fuel conversion to electric space/water heat
  - No specific language on code provisions given robust code improvement cycle in all four states

Staff Proposal

- Expand upon Sixth Plan objectives for conservation programs
- Add that programs should:
  - Better reach underserved or hard-to-reach customers
  - Ensure utilities will adopt voltage optimization on their distribution systems
  - Continue to work toward enhancing codes & standards

Why Hard-to-Reach?

- To achieve *all* cost-effective conservation, *all* customers must be able to participate in EE programs
- Ongoing regional discussion around improving *low-income* energy efficiency
  - BPA Low Income EE Workgroup
  - Stakeholder feedback (utilities, advocates, implementers)
- There are likely *other* underserved markets (e.g. small business, multifamily tenants, manufactured housing)
- Region needs better understanding of where achievement gaps exist then develop and implement strategies to close those gaps

Why Distribution Systems

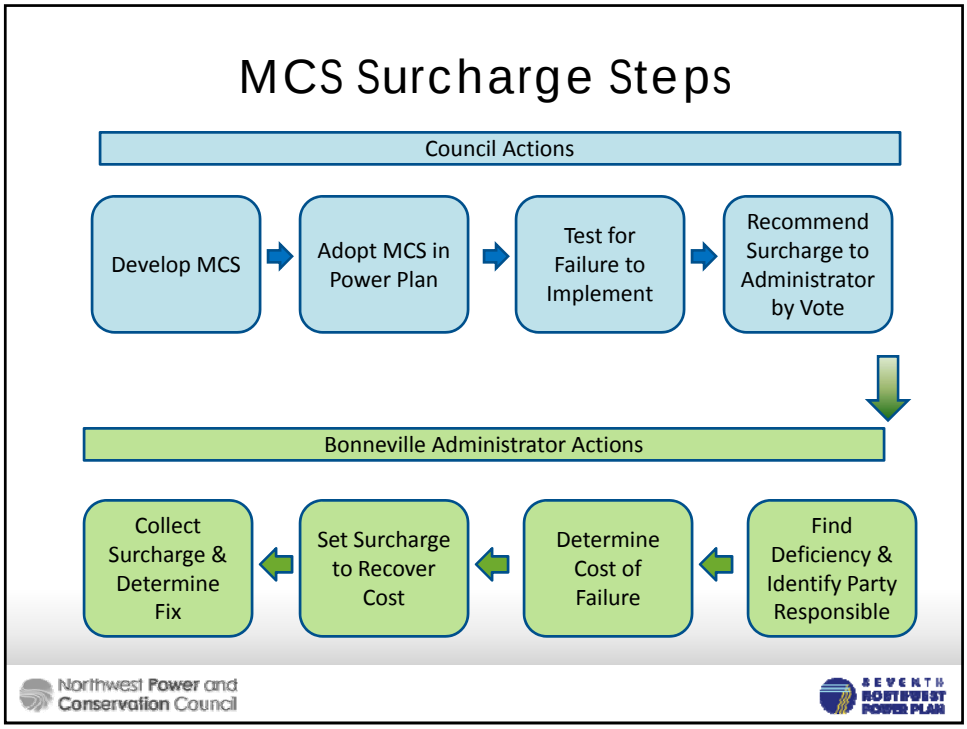
- Significant potential continues to be identified in Power Plans, but limited achievements
- Major barrier in identifying system specific opportunities
- Recommendation focuses on Bonneville helping utilities assess potential and implement measures

Why Codes & Standards?

- Codes and standard are integral and cost efficient approach to conservation acquisition
- Bonneville and utility conservation programs are needed to prove and develop new options
- Regulatory flexibility needed to accelerate adoption

Feedback & Discussion

EXTRA SLIDES


MCS Surcharge Steps
Council Actions
Develop MCS
Adopt MCS in Power Plan
Test for Failure to Implement
Recommend Surcharge to Administrator by Vote
Bonneville Administrator Actions
Collect Surcharge & Determine Fix
Set Surcharge to Recover Cost
Determine Cost of Failure
Find Deficiency & Identify Party Responsible
Northwest Power and Conservation Council
SEVENTH NORTHWEST POWER PLAN

CHAPTER 17: MODEL CONSERVATION STANDARDS

Contents

INTRODUCTION

The Northwest Power Act directs the Council to adopt and include in its power plan model conservation standards (MCS) applicable to (i) new and existing structures; (ii) utility, customer, and governmental conservation programs; and (iii) other consumer actions for achieving conservation. The Act requires that the standards reflect geographic and climatic differences within the region and other appropriate considerations. The Act also requires that the Council design the MCS to produce all power savings that are cost-effective for the region and economically feasible for consumers, taking into account financial assistance from the Bonneville Power Administration and the region's utilities.

In addition to the requirements set forth in the Act, the Council believes the model conservation standards in the plan should produce reliable savings and that the standards should, where possible, maintain and improve upon the occupant amenity levels (e.g., indoor air quality, comfort, window areas, architectural styles, and so forth) found in typical buildings constructed before the first standards were adopted in 1983.

The Power Act provides for broad application of the MCS. In the earlier plans, a strong emphasis was needed to improve residential and commercial building construction practices beyond the existing codes. Beginning with the first standards adopted in 1983, the Council has adopted a total of six model conservation standards. These include the standard for new electrically heated residential buildings, the standard for utility residential conservation programs, the standard for all new commercial buildings, the standard for utility commercial conservation programs, the standard

for conversions, and the standard for conservation programs not covered explicitly by the other model conservation standards.[1] Since the Council adopted its first standards, all four states within the Northwest have adopted strong energy codes that incorporate the model conservation standards set forth in previous plans.

OVERVIEW

Since there are few cost-effective measures beyond current and proposed building energy codes in the region, the Seventh Power Plan MCS focuses on the other aspects of the Power Act provision: utility, customer, and governmental conservation programs, and other consumer actions for achieving conservation. The MCS for the Seventh Power Plan has two main components. The first is an expansion of the standard for utility conservation programs. The utility conservation program standards are the same as in the Sixth Power Plan at a high level, but the Council adopts three specific components to the existing standard to ensure adoption and implementation. The specifics include (1) standards to achieve full participation in programs, (2) incorporation of voltage optimization in distribution systems, and (3) enhancement of codes and standards. Second, it provides the standard for conversions (similar to prior MCS) from an electric space or water heating system from another fuel.

CONSERVATION PROGRAM STANDARDS

This model conservation standard applies to all conservation actions except those covered by the standard for electric space conditioning and electric water heating system conversions. This model conservation standard is as follows: All conservation actions or programs should be implemented in a manner consistent with the long-term goals of the region's electrical power system, as established in the Seventh Power Plan. In order to achieve this goal, the following objectives should be met:

1. Conservation acquisition programs should be designed to capture all regionally cost-effective conservation savings in a manner that does not create lost-opportunity resources. A lost-opportunity resource is a conservation measure that, due to physical or institutional characteristics, will lose its cost-effectiveness unless actions are taken now to develop it or hold it for future use.
2. Conservation acquisition programs should be designed to take advantage of naturally occurring "windows of opportunity" during which conservation potential can be secured by matching the conservation acquisitions to the schedule of the host facilities or to take advantage of market trends. In industrial plants, for example, retrofit activities can match the plant's scheduled downtime or equipment replacement; in the commercial sector, measures can be installed at the time of renovation or remodel.
3. Conservation acquisition programs should be designed to secure all measures in the most cost-efficient manner possible.

[1] This chapter supersedes the Council's previous model conservation standards and surcharge methodology.

4. Conservation acquisitions programs should be targeted at conservation opportunities that are not anticipated to be developed by consumers.
5. Conservation acquisition programs should be designed to ensure that regionally cost-effective levels of efficiency are economically feasible for the consumer.
6. Conservation acquisition programs should be designed so that their benefits are distributed equitably.
7. Conservation acquisition programs should be designed to maintain or enhance environmental quality. Acquisition of conservation measures that result in environmental degradation should be avoided, mitigated or minimized.
8. Conservation acquisition programs should be designed to enhance the region's ability to refine and improve programs as they evolve.

The focus of the Seventh Power Plan MCS is on three areas intended to improve program design and delivery. These include

- Ensuring full participation in programs;
- Achieving voltage optimization; and,
- Enhancing codes and standards.

Standard to Ensure Full Participation in Programs

The model conservation standard to ensure full participation in programs is as follows: To ensure that the region captures all regional cost-effective savings, utilities should secure proportional savings from hard to reach populations. Implementation of Action Plan item CONS-XX is required to satisfy this standard.

The data collected by the Council through the Regional Technical Forum's Regional Conservation Progress report show that the region has exceeded the Council Plan's targets every year since 2005. However, this does not necessarily mean that the region has captured all-cost effective savings identified in the Plan. In pursuing all cost-effective conservation, there are segments of the population that typically participate in programs at lower rates than others, often due to cost barriers. These segments can be classified as "hard to reach (HTR)" or "underserved". While low-income customers are included in the HTR category, other customer classes such as moderate income, manufactured home owners, multifamily building managers, small businesses, commercial customers who are tenants, rural, and large industrial customers in a small utility's service area may also be included in the HTR category if they are unable or unwilling to participate in conservation programs.

The up-front cost often required to purchase or install higher efficiency products or technology is often a significant barrier to HTR consumer adoption of energy-efficient measures, particularly for low- and moderate-income customers. Regional entities (including Bonneville, utilities, Energy Trust of Oregon, Northwest Energy Efficiency Alliance [NEEA]) frequently provide financial incentives to consumers to overcome this barrier, but these financial incentives usually only cover a portion of the measure's cost. The requirement for "cost-sharing" and other program design elements or marketing approaches limits the number of consumers who can participate in energy efficiency programs and thus the amount of cost-effective savings that can be achieved.

Voltage Optimization Standard

The model conservation standard for voltage optimization is as follows: The standard requires utilities to assess and implement all cost-effective potential for voltage optimization. Significant savings could be garnered by optimizing the distribution system using optimization of voltage and reactive power (known as Volt/VAR Optimization or VVO) or conservation voltage regulation (CVR), per the analysis of distribution system savings for the conservation supply curves (see Chapter 12 and Appendix G). Completion of Action Plan item CONS-XX that calls for evaluation of savings on utility distribution circuits and implementation of all cost-effective conservation within a reasonable timeframe are required to satisfy this standard.

Enhance Codes and Standards

The standard requires states and utility-funded programs, including NEEA, to continue to work together to develop conservation options that could be included in future code and standards updates. Implementation of Action Plan items CONS-XX and XX that call for a review of state codes, improved federal test procedures utilizing data from the region, pilot program for emerging technologies that may be included in codes and standards, regional input on federal standards updates, and development of best practices guides for process not covered by codes or standards are required to satisfy this standard.

One of the most cost-efficient ways to ensure adoption of conservation measures is through their enactment as codes and standards. Some examples include:

- Commercial building energy reductions – include variable refrigerant flow systems, low lighting power densities, and dedicated outside air systems
- Industrial processes, including indoor agriculture and data centers – develop best practice guides to run processes as efficiently as possible
- Federal standards test procedures – develop data in support of the federal standard test procedures

CONVERSION TO ELECTRIC SPACE AND WATER HEATING

The model conservation standard for existing residential and commercial buildings converting to electric space conditioning or water heating systems is as follows: State or local governments or utilities should take actions through codes, service standards, user fees or alternative programs or a combination thereof to achieve electric power savings from such buildings. These savings should be comparable to those that would be achieved if each building converting to electric space conditioning or electric water heating were upgraded to include all regionally cost-effective electric space conditioning and electric water heating conservation measures.

SURCHARGE RECOMMENDATION

The Power Act authorizes the Council to recommend a surcharge and the Bonneville Administrator may thereafter impose such a surcharge on customers which have not, implemented conservation measures that achieve energy savings comparable to those which would be obtained under the Model Conservation Standards in the plan. The Council does not recommend a surcharge to the Administrator under Section 4(f) (2) of the Act at this time.

The Council intends to continue to track regional progress toward the Plan's MCS and will review its decision on the recommendation, should accomplishment of these goals appear to be in jeopardy. Should utilities fail to enact these standards, then Bonneville may need the ability to recover the cost of securing those savings. In this instance the Council may wish to recommend that the Administrator be granted the authority to place a surcharge on that customer's rates to recover those costs.

Surcharge Methodology

Section 4(f)(2) of the Northwest Power Act directs the Council to include a surcharge methodology in the power plan. The surcharge must, per the Act, be no less than 10-percent and no more than 50-percent of the Administrator's applicable rates for a customer's load or portion of load. The surcharge is to be applied to Bonneville customers for those portions of their regional loads that are within states or political subdivisions that have not, or on customers who have not, implemented conservation measures that achieve savings of electricity comparable to those that would be obtained under the model conservation standards.

The purpose of the surcharge is twofold: 1) to recover costs imposed on the region's electric system by failure to adopt the model conservation standards or achieve equivalent electricity savings; and 2) to provide a strong incentive to utilities and state and local jurisdictions to adopt and enforce the standards or comparable alternatives. The surcharge mechanism in the Act was intended to ensure that Bonneville's utility customers were not shielded from paying the full marginal cost of meeting load growth.

As stated above, the Council does not recommend that the Administrator invoke the surcharge provisions of the Act at this time. However, the Act requires that the Council's plan set forth a methodology for surcharge calculation for Bonneville's administrator to follow.

Should the Council alter its current recommendation to authorize the Bonneville administrator to impose surcharges, the method for calculation is set out below.

Identification of Customers Subject to Surcharge

The administrator should identify those customers, states or political subdivisions that have failed to comply with the model conservation standards set forth within this chapter.

Calculation of Surcharge

The annual surcharge for non-complying customers or customers in non-complying jurisdictions is to be calculated by the Bonneville administrator as follows:

1. If the customer is purchasing firm power from Bonneville under a power sales contract and is not exchanging under a residential purchase and sales agreement, the surcharge is 10 percent of the cost to the customer of all firm power purchased from Bonneville under the power sales contract for that portion of the customer's load in jurisdictions not implementing the model conservation standards or comparable programs.

2. If the customer is not purchasing firm power from Bonneville under a power sales contract, but is exchanging (or is deemed to be exchanging) under a residential purchase and sales agreement, the surcharge is 10 percent of the cost to the customer of the power purchased (or deemed to be purchased) from Bonneville in the exchange for that portion of the customer's load in jurisdictions not implementing the model conservation standards or comparable programs.

If the customer is purchasing firm power from Bonneville under a power sales contract and also is exchanging (or is deemed to be exchanging) under a residential purchase and sales agreement, the surcharge is: a) 10 percent of the cost to the customer of firm power purchased under the power sales contract; plus b) 10 percent of the cost to the customer of power purchased from Bonneville in the exchange (or deemed to be purchased) multiplied by the fraction of the utility's exchange load originally served by the utility's own resources

Evaluation of Alternatives and Electricity Savings

A method of determining the estimated electrical energy savings of an alternative conservation plan should be developed in consultation with the Council and included in Bonneville's policy to implement the surcharge.

Draft MCS Related Action Plan Items

July 30, 2015

CONS-1. **Ensure full participation in programs** [Bonneville, Utilities, Energy Trust, States] In order to achieve all cost-effective conservation, all customer segments should participate in programs. Utilities should determine how to improve participation from any underserved segments. Although low-income customers are often an underserved segment, other hard-to-reach (HTR) segments may include: mid-income customers, customers in rural regions, small businesses owners, commercial tenants, multifamily tenants, manufactured home dwellers, and industrial customers. Ideally, the portion of program participants from the HTR segments should be proportional to portion of HTR customers in the population. To accomplish this goal, utilities will first need to estimate portion of customers that may be classified as HTR across sectors by ensuring data collection from programs includes demographic/firmographic data. BPA and the utilities should coordinate with local and state agencies to leverage their data on various segments. For example, community action programs will have information on low-income customers. The portion of participating customers in the assumed HTR segments should then be compared against the portion of customers within these segments in the utility's service area. This will determine which customer segments are indeed underserved. First report to the Council on proportion of participation from HTR segments in 2018, and then annually. After the first report, the regional utilities should devise strategies to improve participation by the identified HTR segments.

CONS-2. **Develop program to assess and capture distribution efficiency savings.** [RTF, Bonneville, Utilities] Significant cost-effective savings can be achieved through voltage optimization measures, such as conservation voltage regulation. The relatively slow historical adoption of these measures has been due to a variety of barriers that may be addressed by programs or performance standards. By spring of 2017, Bonneville should develop a plan to determine potential savings, identify barriers, and develop program assistance or distribution system performance standards. The plan should outline resource needs sufficient to assess potential and begin programs for one-third of its utility customer load by 2021 with the goal of implementing all cost-effective measures for 85 percent of its utility-customer load by 2035. Investor-owned utilities should do similar analyses and resource deployment.

CONS-3. **Develop a regional work plan to provide adequate focus on emerging technologies to help ensure adoption** [Bonneville, NEEA, Utilities, National Labs, Energy Trust, Council] Nearly half of the potential energy savings identified in the Council's Seventh Power Plan are from emerging technologies or measures not in previous plans. The region has proven success of moving emerging technologies and design strategies into marketplace and should continue to work toward this goal. This includes (1) tracking adoption of new measures in the Seventh Power Plan supply curves, (2) identifying actions to advance promising technologies and design strategies, (3) increasing adoption of existing technologies with low market shares, and (4) scanning for new technologies and practices. The Regional Emerging Technology Advisory Committee (RETAC) should develop a work plan to ensure success in these four areas and to track progress over the action plan period. The initial work plan should be developed by mid 2016 and updated every two years.

CONS-4. **Develop and deploy best-practice guides for the design and operations of emerging industries** [NEEA, Bonneville, Utilities, Trade Allies, States] Emerging industries such as indoor agriculture and large data centers are rapidly increasing throughout the region. Many of these facilities have significant load that could be reduced with guidance on best-practice design and operational approaches. Development of the first generation of best-practice guides should be available by late-2016. NEEA should identify opportunities to deploy the best-practice guides to decision makers and design and operations professionals in the respective industries.

CONS-5. **Engage in federal and state standard development** [Council, Bonneville, NEEA, Energy Trust, Utilities] Regional presence in the standard setting process has provided immense value to the region and the country. NEEA should lead the effort to continue and perhaps expand this engagement with the U.S. Department of Energy as well as provide data and recommendations. The region's engagement should inform the standards and the test procedures. NEEA should also assist the states in the development of state-level standards for products not covered by the federal rules. This should be an ongoing activity with periodic assessment of resource requirements.

CONS-6. **Monitor and track code compliance in new buildings.** [NEEA, National Labs] Ensure new buildings are built at or above code-required levels across four states and the residential and commercial sectors. To complete, NEEA will need to hire a contractor to conduct surveys and/or perform site visits of builders and buildings and submit reports by state and sector over the action plan period. NEEA should explore whether there may be other regional entities (e.g. Pacific Northwest National Laboratory) with whom NEEA could collaborate and leverage their work. NEEA's work plan and budget should include sufficient resources for continuing studies with the expectation of reports for all states and sectors by 2020. Ideally, the completion of these reports should be timed to inform future code updates.

CONS-7. **Encourage utilities to actively participate in the processes to establish and improve the implementation of state efficiency codes and federal efficiency standards.** [State Regulators, Bonneville, Utilities] Without robust efficiency programs paving the way for new measures and practices, efficient building codes and standards could not achieve their current levels of efficiency. However, for codes to continue to improve, programs need flexibility in pursuing measures that may not currently be cost-effective, but demonstrate likely cost reductions. In addition, as building codes and federal standards begin to push the envelope of emerging efficiency practices, regulators should provide allowance for programs to offer measures and practices which are new, have limited market acceptance or availability, or are part of voluntary code provisions. Based on results of code compliance studies, Bonneville and the utilities should work with authorities having jurisdiction to encourage code compliance in any areas where it is lacking. This activity should be ongoing throughout the action plan period and should be reviewed after adoption of new code provisions.