State of Oregon
Department of Environmental Quality Memorandum

Date: Oct. 15, 2014

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda item D, Informational item: Oregon's comments on EPA's proposed rules for greenhouse gas emission reductions from existing power plants
Nov. 5-7, 2014, EQC meeting

Why this is important

Oregon intends to submit comments to EPA on its proposal to use the Clean Air Act to regulate greenhouse gas emissions from existing fossil fuel power plants. These comments provide Oregon's perspective on the overall approach EPA chose to develop a carbon dioxide emission standard for existing power plants, and specific compliance and implementation considerations relevant to power sector characteristics in Oregon and the Northwest.

Background

EPA's proposed rule, known as the Clean Power Plan, will require Oregon to adopt a state plan with measures to reduce emissions from fossil fuel plants to achieve EPA's emission guideline. DEQ will be the lead state agency developing Oregon's plan. Carbon dioxide emissions from power plants represent a third of the greenhouse emissions in the United States. EPA's proposed rule would reduce carbon dioxide emissions from power plants 30 percent by 2030 compared to 2005 levels.

The proposed rule incorporates emission reductions not just from operating improvements at the power plants, but also from renewable energy and energy efficiency that can lower demand on these facilities. EPA projects that the significant reductions in carbon pollution and other air pollutants would result in net climate and health benefits of $48 billion to $82 billion. At the same time, coal and natural gas would remain the two leading sources of electricity generation in the U.S., with each providing more than 30 percent of the projected generation.

Next steps and commission involvement

DEQ staff will bring informational items and updates to the commission in 2015. DEQ may be required to establish new state rules to implement Oregon's state plan. State plans are currently anticipated due to EPA in 2016, with the possibility of a one or two-year extension. Staff will involve commissioners at various levels throughout any resultant rulemaking processes.

Attachments A. Oregon's draft comment letter to EPA

Approved:

_____
Lydia Emer, Operations Division

_____
Leah Feldon, Air Quality Operations Section

Report prepared by Colin McConnaha

Oregon

John A. Kitzhaber, MD, Governor

Department of Environmental Quality
Agency Headquarters
811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
FAX (503) 229-6124
TTY 711

October 16, 2014

Docket ID: EPA-HQ-OAR-2013-0602

Ms. Gina McCarthy, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Dear Administrator McCarthy:

Oregon appreciates the opportunity to provide comment to the U.S. Environmental Protection Agency (EPA) on the Clean Power Plan Proposed Rule ("Proposal") to reduce greenhouse gas pollution from existing power plants using Section 111(d) of the Clean Air Act ("CAA"). The Proposal is a welcome federal response to reversing climate change and is a good first step in mitigating the effects of greenhouse gas pollution across the country.

I commend the EPA for accelerating a national response to the costs and risks of climate change. Oregon already is experiencing the impacts of climate change, from ocean acidification and dead zones offshore to rampant wildfires last summer that cost more than $120 million. This bold step will protect the health of citizens across the country while supporting the growing energy efficiency and renewable energy economy on the West Coast. In addition, I appreciate the Proposal's emphasis on giving states flexibility to build on programs and partnerships that already are protecting public health, saving consumer's money, and spurring innovation in cleaner, safer energy.

My comments include general observations on the approach taken in developing the Proposal, as well as specific recommendations for the final Clean Power Plan regarding important compliance considerations for Oregon. These comments have been developed through close collaboration among staff at Oregon's Department of Environmental Quality (DEQ), Oregon Department of Energy (ODOE), and the Oregon Public Utility Commission (PUC) and through outreach with a wide range of stakeholders.

The following sections are not exhaustive of every issue identified by Oregon agencies and stakeholders or responsive to each solicitation for comment included in the Proposal. Instead, these comments focus on topics of most significance to developing a compliance plan for Oregon that can cost-effectively achieve the emission reductions required by the Proposal. The following principles have guided the development of these comments:

- Oregon supports maximizing carbon reductions at least cost, by leveraging the full range of states' tools and investments and possible creative multi-state opportunities;

- Oregon supports EPA's approach to developing the "Best System of Emission Reduction" (BSER) and accounting for emission reductions from re-dispatch, renewable energy development, and energy efficiency measures;

- Oregon seeks to ensure that the tools used to develop the building blocks of the BSER are available, if reasonably possible, for states to use as emissions reduction compliance measures;

- Oregon focuses on issues that are of primary or unique importance to the State and the Northwest region; and

- Oregon offers workable solutions, rather than only identifying concerns.

Summary of Key Recommendations

EPA's use of the inter-connected power system as its regulatory framework in the Proposal will achieve significant, cost-effective emission reductions, primarily because it affords States, utilities, and power plants the flexibility to reduce emissions through a range of methods. The general approach EPA has taken to develop the BSER aligns with Oregon's objectives and prior input to EPA. However, the resultant emission reduction requirements in the Proposal also make it critical that Oregon and other states be allowed to account for the full extent of emission reductions achieved through investments in renewable energy and energy efficiency in state compliance plans.

Of critical importance to Oregon is the possibility that energy efficiency investments may not be credited for the full breadth of resultant emission reductions. It is vital that Oregon and other states be able to credit the entire amount of emission reductions produced from energy efficiency investments so that states are able to achieve the appropriately ambitious goals in the Proposal in a cost-effective manner. These concerns and workable solutions are further outlined in Section V of this letter.

The following are additional key recommendations in this comment letter. Each recommendation includes background information with one or more workable solutions that Oregon urges EPA to incorporate in the final Clean Power Plan.

- **Baseline**: EPA should use at least the most recent three years as the baseline, instead of using only 2012. *(See Section II(B)).*
- **Exceptional Events**: EPA should accommodate exceptional events outside the control of states that occur during the compliance period, such as extreme or unusual weather events that are significantly different from conditions during the baseline period. (*See Section II(C)).*
- **Double Counting**: To avoid disincentives for energy efficiency investments, EPA should require states using a mass-based state compliance plan to account for emission reductions occurring due to actions taken by other states to avoid possible double counting of emission reductions, while other states should be required to cooperate in sharing necessary data. (*See Section III(B)).*
- **Renewable Energy Compliance**: Oregon supports EPA's consumption-based approach to renewable energy crediting in state compliance plans. (*See Section IV(B)).*

- **Alternate Renewable Energy BSER Calculation**: Oregon supports the alternative method for calculating the renewable energy portion of the BSER, but with a modification to use regional technical and economic potential for each technology. (*See Section IV(C)).*
- **Renewable Energy Technologies**: Oregon recognizes that EPA likely intends to allow states to credit the full range of renewable energy generation, but EPA should, nevertheless, clarify that all emission reductions resulting from a range of renewable technologies, such as biomass, incremental hydroelectric power, and marine renewable energy, are acceptable in a state compliance plan. (*See Section IV(D)).*
- **Energy Efficiency Compliance Approach**: As discussed above as the most critical concern for Oregon, EPA should adopt a consistent compliance approach requirement where the state that implements an energy efficiency measure will claim the resulting emission reductions in its state compliance plan. (*See Section V(B)).*
- **Hydroelectric Power System Energy Efficiency Measures**: EPA should allow states to credit end use efficiency measures that reduce demand on the carbon-free hydroelectric power system and subsequently offset fossil-fuel generated power in a state compliance plan. (*See Section V(C))*
- **Crediting Energy Efficiency**: For crediting emission reductions resulting from energy efficiency measures, EPA should allow each state to assign an emission reduction value equal to the emissions rate of the power pools' marginal resources. (*See Section V(D)).*
- **Federal Entity Compliance Measures**: EPA should clarify how compliance measures involving federal entities, such as Bonneville Power Administration, may be incorporated in a state compliance plan to leverage emission reductions from federal investments renewable energy and energy efficiency. (*See Section V(E)).*
- **Types of Energy Efficiency Measures**: EPA should allow states to credit energy savings from demand response, enforcement of building codes, federal and state appliance standards, and market transformation in a state compliance plan through robust evaluation, measurement, and verification protocols. (*See Section V(F)).*
- **Periodic BSER Re-Evaluation**: EPA should develop a timeline and approach for periodic re-evaluation of the BSER. (*See Section VI(A)).*
- **Multi-State Compliance**: EPA should clarify that states may cooperate regionally without blending state goals into a regional goal, expand options to explicitly allow for a variety of multi-state arrangements, and allow for updates to state compliance plans if later multi-state agreements emerge. (*See Section VI(B)).*

Organization of Comments

The first section of this letter expresses support for the overall approach EPA has taken in developing the Proposal in general and the BSER specifically. The second section provides a brief description of the power sector in Oregon and the Northwest to provide context for comments on compliance issues that are of particular importance to Oregon and the region. The third section addresses key considerations related to crediting and double counting, which are relevant to the overall regulatory framework of the Proposal. The fourth section provides comments specific to renewable energy and the fifth section provides comments specific to energy efficiency. The letter closes with administrative and scheduling related comments.

I. SUPPORT FOR INCLUDING RE-DISPATCH, RENEWABLE ENERGY, AND ENERGY EFFICIENCY IN THE BSER

EPA appropriately defined the "system" in the BSER broadly to encompass many of the least-cost measures that can reduce carbon dioxide emissions at existing fossil-fuel power plants. In particular, the EPA has correctly accounted for emission reductions available through re-dispatch to natural gas plants, renewable energy development, and energy efficiency measures. In Oregon, renewable energy and energy efficiency provide two of the most significant methods for reducing greenhouse gas emissions from the power sector, while driving economic development and reducing costs to utility rate payers.[1] According to the BSER calculation, 56 percent of the Oregon goal is derived from blocks three and four.[2]

Prior to the issuance of the Proposal, Oregon expressed support for renewable energy and energy efficiency to be incorporated in the BSER through three letters sent to EPA:

1. In a letter dated March 10, 2014, Oregon Governor John Kitzhaber wrote to express support for EPA developing a plan to cut carbon emissions from the power sector. Governor Kitzhaber urged EPA to achieve meaningful greenhouse gas emission reductions from existing power plants by defining the BSER broadly to include renewable energy and energy efficiency.

2. Oregon Attorney General Ellen Rosenblum joined Attorneys' General from 12 other states and the District of Columbia in a letter explaining how EPA's legal authority under Section 111(d) of the CAA allows for the BSER to be defined broadly to include renewable energy and energy efficiency.

3. Oregon DEQ joined environmental and energy agencies from 14 other states to sign a letter developed in cooperation with the Georgetown Climate Center that expresses strong support for EPA to look broadly at the emission reductions available in the power sector and provides examples from many states that are already reducing emissions with renewable energy and energy efficiency.[3]

Because the BSER included in the Proposal accounts for the emission reductions available from renewable energy and energy efficiency as encouraged by Oregon's prior input to EPA, these comments do not directly address the stringency of the emission reductions required in the Proposal. However, the stringency of emission reduction goals, which is a natural result of taking into account renewable energy and energy efficiency, makes it vital that states, utilities, and facility operators, are able to receive credit for the full breadth of emission reductions from their investments in these measures. The comments in the following sections explain some of the unique characteristics of the power sector in Oregon and the Northwest region and how this produces significant considerations for accounting and attributing emission reductions from renewable energy and, in particular, energy efficiency.

---

[1] *See* Appendix 1: Renewable Energy and Energy Efficiency Resource Portfolio.
[2] Blocks three and four together are 193 pounds of emission reduction out of 345 pounds of Oregon's total emission reduction goal. *See* U.S. ENVIRONMENTAL PROTECTION AGENCY OFFICE OF AIR AND RADIATION, GOAL COMPUTATION TECHNICAL SUPPORT DOCUMENT (2014), *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-goal-computation.pdf
[3] Letter to Administrator Gina McCarthy from fifteen state environmental agency leaders (December 16, 2013), *available at* www.georgetownclimate.org/states-provide-epa-with-a-road-map-for-cutting-carbon-pollution

II. KEY CONSIDERATIONS RELATED TO THE UNIQUE POWER SECTOR IN OREGON AND THE NORTHWEST

This section describes the power sector in Oregon and the Northwest, and includes several recommendations about how the compliance process could be improved to better accommodate the unique characteristics of the Northwest region.

A. Overview of the hydroelectric power system in the Northwest

Oregon and the Northwest are uniquely reliant on hydroelectricity generation.[4] This characteristic influences carbon dioxide emissions in the region. Hydroelectric power provides about three-quarters of the region's electric energy on average.[5] The combined output from dams in the Federal Columbia River Power System (FCRPS) in Oregon, Washington, Idaho, and the western half of Montana averages at least 16,000 average megawatts (aMW).[6] In good water years, surplus power is sold in and outside the region.[7]

While the Northwest hydroelectric power system provides an abundance of cheap and non-emitting electricity to the region, it is also highly variable depending upon annual weather conditions. The hydroelectric power system in the Northwest has a capacity of 33,000 MW; yet it operates at approximately a 50 percent capacity factor because of limited water supply and environmental requirements, such as the provision of sufficient water flow for endangered salmon populations. In the wettest years, it can produce over 19,000 aMW. In the driest year on record it would produce only 11,800 aMW of energy. [8]

Annual variability of the Northwest hydroelectric power system produces commensurately variable demand for thermal power generation to meet the remaining regional electric demand. Thus a direct relationship exists between the water year and the carbon dioxide emissions produced by electric generation in the Northwest region. High water years allow for greater hydroelectric power generation and lower demand on gas and coal plants, while low water years reverse this dynamic. For example, 2006 was a high water year and approximately 52 million tons of carbon dioxide were emitted from generation serving demand in the Northwest, while in the following year the region experienced a low water year and emissions increased 25 percent to 65 million tons of carbon dioxide. [9]

Oregon's electricity customers are served by two types of electric utilities: consumer-owned utilities and investor-owned utilities.[10] Consumer-owned utilities, including municipal owned utilities, cooperatives, and public utility districts, have priority access to the output of the carbon emission-free FCRPS marketed by BPA and together serve about 30 percent of the state's

---

[4] *See* Appendix 6: Background on unique hydroelectric power sector in Oregon and the Northwest.
[5] *See* NORTHWEST POWER AND CONSERVATION COUNCIL, SIXTH NORTHWEST CONSERVATION AND ELECTRIC POWER PLAN 6-17, *available at*: www.nwcouncil.org/media/6371/SixthPowerPlan_Ch6.pdf [hereinafter NWPCC SIXTH POWER PLAN].
[6] An average megawatt (aMW) is 8,760 megawatt hours of electric energy.
[7] *See* BONNEVILLE POWER ADMINISTRATION, HYDROPOWER HOW THE FEDERAL COLUMBIA RIVER POWER SYSTEM WORKS FOR YOU (2010), *available at* www.bpa.gov/news/pubs/GeneralPublications/fcrps-Hydropower.pdf
[8] *See* NWPCC SIXTH POWER PLAN, *supra* note 5, at 6-17.
[9] GILLIAN CHARLES, NORTHWEST POWER AND CONSERVATION COUNCIL, REGIONAL GHG EMISSIONS PRESENTATION 7, *available at* www.nwcouncil.org/media/6865106/G-Charles-Council-Staff-GHG-Symposium.pdf
[10] *See* Appendix 3: Map of Oregon Electric Utility Service Territories.

electricity load. Portland General Electric (PGE), Pacific Power, and Idaho Power Company are investor-owned utilities that serve roughly 70 percent of the load in Oregon.[11] Much of the fossil-fuel generation used to serve the investor-owned utility customers in Oregon is imported from Montana, Utah, and Wyoming. In this context, Oregon is a net importer of fossil-fuel generated power. Overall, EPA has characterized Oregon as a net exporter of energy because of the hydroelectricity generated through the FCRPS and used throughout the region, yet the investor-owned utilities are "importing" significant carbon emissions.

B. Recommendation: EPA should use at least the most recent three years as the baseline, instead of using 2012.

Generation data over a single year is unlikely to represent power generation in the highly variable stream flows of the FCRPS. As discussed above, the variability of the water year in the Northwest means that there is no "typical" annual emission rate. The fossil-fuel generation will follow the production from the hydroelectric power system. Oregon recommends that EPA use at least the average of the last three available years as a baseline period, rather than using the baseline year of 2012. A baseline with the most recent three years is a reasonable compromise between using the most current data and attempting to develop a baseline that incorporates year-to-year variations in generation and emissions. Furthermore, an average of the three most recent years also aligns the baseline with the rolling three year average EPA is proposing for compliance.

C. Recommendation: EPA should accommodate exceptional events outside the control of state that occur during the compliance period, such as extreme or unusual weather events that are significantly different from conditions during an averaged baseline period.

Oregon supports the three-year rolling average for compliance after 2030, as contemplated in the Proposal. This rolling average, however, should be tempered by an allowance for unusually unfavorable conditions that inhibit a state's ability to achieve the emission goal during a certain period. This is especially important for Oregon and states in the Northwest given our reliance on generation from a hydroelectric power system that is directly influenced by annual temperature and precipitation patterns.

Furthermore, weather patterns are expected to become more variable and generally less favorable for hydroelectric power generation in the region as the climate warms. Current climate models show, with significant confidence, lessened seasonal snow pack and dramatic changes in seasonal stream flow[12] that would lower hydroelectric power generation and in turn increase demand for thermal generation. While this general trend illustrates the need for actions like the Proposal to reduce greenhouse gas emissions from the power sector to slow climate change, it also makes consistent compliance in states like Oregon unrealistic during periods of unusual or severe drought or other environmental extremes.

---

[11] *See* Appendix 4: Oregon Electric Supplier Background Information for a table of percentage of load served by utility type in Oregon.
[12] *See* NWPCC SIXTH POWER PLAN, *supra* note 5, L-5.

It is prudent for EPA to develop a compliance approach that acknowledges extreme weather events or other conditions outside the control of states for which the normal planning and regulatory process established by the CAA is not appropriate. EPA already provides a similar approach to avoid determining that areas of the country exceed the National Ambient Air Quality Standards by excluding air quality monitoring data collected during a period for which a state adequately demonstrates an exceptional event caused the exceedance. Oregon suggests that EPA use a similar approach in the Proposal that would allow states to show that an exceptional event has created conditions that made it infeasible for the reliable generation and transmission of electricity to achieve emission reduction requirements in a specific compliance period.

III. KEY CONSIDERATIONS RELATED TO CREDITING AND DOUBLE COUNTING

An accounting mechanism that prevents double counting of emissions reductions across state lines is essential because of the interconnected nature of the electric system, whereby resources in one state often serve customers in another state. Without a clear accounting mechanism, the issue of double counting may extend across the regulatory framework of the Proposal, and, in particular, impact how emission reductions resulting from renewable energy development and energy efficiency should be treated in a state compliance plan. This section recommends a simple approach to overcome issues related to double counting of emissions reductions in the Proposal.

A. Overview of Crediting and Double Counting Concerns

Double counting of emission reductions from energy efficiency measures may occur when states within the same interconnected system elect to comply using a combination of rate-based and mass-based systems. As discussed in Section II(A), most fossil-fuel generation serving Oregon load is sited in other interconnected states. Should one of the states from which Oregon imports generation elect to use a mass-based system, Oregon's investments in energy efficiency may automatically be counted by the exporting state unless corrective accounting measures are employed in the compliance process.

For example, in the summer months BPA sends large amounts of power from the FRCPS over a dedicated direct current line to the Los Angeles Basin, which offsets load that would otherwise be served by carbon intensive resources in California and neighboring Southwest states. Thus BPA and consumer-owned utilities' energy efficiency measures on the FRCPS cause Los Angeles to require less fossil-fuel generation in the summer months. If California were to use a mass-based approach in its state compliance plan, the energy savings from BPA and Oregon consumer-owned utilities may be double-counted in both Oregon and California.

B. Recommendation: To avoid disincentives for energy efficiency investments, EPA should require states using a mass-based state compliance plan to account for emission reductions occurring due to actions taken by other states to avoid possible double counting of emission reductions, while other states should be required to cooperate in sharing necessary data.

The Clean Power Plan should preserve credit for emission reduction from energy efficiency measures for the state that made the energy efficiency investment and from renewable energy development for the state that consumes the renewable energy and retires its attendant

Renewable Energy Credit (REC). In the case where states in an interconnected region concomitantly elect a combination of rate- or mass-based compliance, EPA should assure that double-counting does not result. EPA should include a presumptive approach for emission reductions to be attributed to the state investing in the reduction measures, along with a requirement that states using a mass-based approach must adjust their compliance documentation to reflect that they are not claiming credit for those emission reductions.

EPA should require a state using a mass-based compliance approach to account for any potential double counting issues in its state compliance plan. A state using a mass-based compliance approach should discount its emission reduction compliance number by any emission reductions that are the result of out-of-state investments in energy efficiency or renewable energy. Rate-based compliance states that are investing in energy efficiency measures should include a commitment in state compliance plans to provide any necessary data to mass-based compliance states upon request. EPA should verify the cross-state emission reductions resulting from energy efficiency measures in its review of each state's compliance plans.

IV. KEY CONSIDERATIONS RELATED TO RENEWABLE ENERGY

Oregon agrees with EPA that expanded renewable energy generation provides an important and cost-effective component of the Proposal. Oregon fully supports its inclusion in the BSER.

A. Overview of Renewable Energy in Oregon

Oregon is home to a full range of renewable energy resources, including wind, solar, geothermal, biomass, ocean energy, and hydroelectric power, and has a strong suite of policies to encourage the development and use of renewable energy in the state and the broader region. In 2007, Oregon enacted a renewable portfolio standard (RPS) that requires the largest utilities in Oregon to provide 25 percent of their retail sales of electricity from renewable sources of energy by 2025. This policy is the state's strongest device for furthering the development of renewable resources. Along with fellow Western states, Oregon has established a tracking system, Western Renewable Energy Generation Information System (WREGIS), to ensure that the attributes and megawatt hours (MWhs) of renewable energy are accounted for properly and double attribution of renewable energy does not occur.

B. Recommendation: Oregon supports EPA's consumption based approach to renewable energy crediting in state compliance plans.

Oregon supports the approach in EPA's proposal of allowing states to take into account in their state compliance plans all of the MWhs of renewable generation and associated carbon dioxide emission reductions from renewable energy measures implemented by the state, whether they occur in the state or in other states. This approach is consistent with how WREGIS states and others across the country currently administer their RPS programs. It also ensures that ratepayers who pay for the renewable resources are credited with the emission reductions they create. Oregon ratepayers pay for RECs that are retired on their behalf as required by the RPS. Oregon ratepayers should therefore be awarded the carbon emission reduction credit those renewable MWhs create via Oregon's compliance plan.

C. *Recommendation: Oregon supports the alternative method for renewable BSER calculation, but with a modification to use regional technical and economic potential for each technology.*

In response to specific requests from EPA for comment on the Alternative Renewable Energy Approach, Oregon generally supports the conceptual framework of using technical and economic potential to quantify renewable energy generation for purposes of setting state goals, as discussed in the Alternative Renewable Energy Approach TSD. Oregon recommends that EPA develop a methodology that uses regional potentials for technologies as opposed to state-by-state assessments, such as the methodology discussed in section 1.4 of the Alternative Renewable Energy Approach TSD.[13] In addition, EPA should design a methodology that does not apply a development rate constraint to the potential renewable energy available as proposed in the alternative methodology. Using cost-effective potential reflects the actual opportunity for expanding renewable resources in any given region or state.[14] Further constraints are unnecessary.

This modified alternative renewable energy approach has several merits. A methodology using technical and economic potential more accurately reflects the availability of cost-effective renewable energy compared to the proposed approach of using RPS requirements already established by states. RPS is a specific policy instrument whose stringency varies widely for reasons often unrelated to the cost or availability of renewable energy.

Generally, renewable power can flow within a region, not just within the state in which it is sited. Using a regional technical and economic potential for technologies will help to average out anomalous state-level results and generate state-level targets that are more indicative of states' ability to cost effectively develop renewable power to serve their demand. Apportioning a regional average potential for renewable energy to states based on their share of the regional electric load provides a better indication of states' abilities to invest in renewable energy to serve their loads as these investments are likely to site the renewable energy within the region but may not occur within the borders of the state making the investment. A regional approach to this building block ensures greater symmetry between tools available for compliance and the methodology used to construct the BSER.

---

[13] *See* U.S. ENVIRONMENTAL PROTECTION AGENCY, ALTERNATIVE RENEWABLE ENERGY APPROACH TECHNICAL SUPPORT DOCUMENT (2014), *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-alternative-re-approach.pdf

[14] For example, the National Renewable Energy Laboratory examined the potential for renewable energy to meet demand in the Western U.S. once the requirements of state RPS policies are met in the mid-2020s and found that significant renewable potential exists in the region and is likely to be competitive with the levelized cost of a locally-sited combined cycle gas turbine. The study also finds that regional development of additional renewable energy supplies is likely to be the most cost-effective. *See* DAVID HURLBURT, JOYCE MCLAREN AND RACHEL GELMAN, NATIONAL RENEWABLE ENERGY LABORATORY, TECHNICAL REPORT NREL/TP-6A20-57830 (2013), *available at* http://www.nrel.gov/docs/fy13osti/57830-1.pdf

D. Recommendation: Oregon recognizes that EPA likely intends to allow the full range of renewable energy generation, but EPA should, nevertheless, clarify that all emission reductions resulting from a range of renewable technologies, such as biomass, incremental hydroelectric power, and marine renewable energy, are acceptable in a state compliance plan.

Oregon supports EPA allowing generation from biomass in a state compliance plan similar to non-emitting generation and consistent with EPA's forthcoming biogenic carbon dioxide accounting framework. EPA should finalize and publish this framework as soon as possible. Doing so will provide clarity and assurance for how biomass can be used for compliance with the Proposal and aid in early design of state compliance plans. Also, adding carbon capture and sequestration (CCS) technology to a biomass facility can lead to a net sequestration of carbon. Emissions from such facilities should be calculated in the same way as for a coal facility with CCS. This method of calculation for a biomass facility with CCS potentially leads to negative net emissions from those facilities.

Oregon supports EPA allowing incremental hydroelectric power projects to provide compliance credit as these types of upgrades extend the hydroelectric power system and provide for real emission reductions. The estimates and accounting for this technology can vary widely among operators; EPA should, therefore, consider best practices in the states when it develops the methodology for these calculations. Additionally, incremental hydropower is an efficiency improvement and EPA should consider providing states guidance on the appropriate measure life for such an upgrade.

Finally, commensurate with the view that EPA should allow states to retain the credit for the renewable power that they incent, regardless of where that generation occurs, Oregon supports EPA allowing offshore wind and wave and other marine renewable resources to provide compliance credit in the same manner as other renewable energy technologies, whether they are located in state territorial waters or federal waters. Marine energy is an emerging renewable energy sector that offers unique benefits to coastal communities with limited power generation options.

V. KEY CONSIDERATIONS RELATED TO ENERGY EFFICIENCY

Oregon agrees that expanded energy efficiency measures provide an important and cost-effective component of the BSER. Oregon fully supports its inclusion in the BSER calculation. However, Oregon has significant concerns about the proposed approach for crediting energy efficiency in state compliance plans. In particular, the Proposal as described in the preamble presents insurmountable challenges for states like Oregon that are net importers of fossil generation yet are characterized in the EPA's BSER calculation as net exporters of electricity overall.

Under the proposed approach, Oregon would not be able to develop a cost-effective compliance plan because the state would only be able to credit a small fraction of the investment in energy efficiency that can be tracked to fossil-fuel generation in the state. This would effectively render as unusable otherwise cost-effective investments in energy efficiency that were assumed in setting the BSER, and force Oregon to rely on much more expensive and potentially infeasible over-compliance with measures contemplated in the other three building blocks. It is of utmost

importance that EPA allows Oregon to take credit for the full breadth of emission reductions resulting from energy efficiency investments in its state compliance plan.

The following sections describe this issue and solutions for providing reasonable credit to energy efficiency while still avoiding double counting of emission reductions from a measure by two or more states.

A. Overview of Energy Efficiency in Oregon

Most Northwest states, consistent with the Northwest Power Act of 1980, treat energy efficiency on par with generating resources.[15] When calculating Oregon's BSER and the rate goal, EPA properly accounted for all energy efficiency investment in Oregon including energy efficiency investments made on the systems served almost solely by hydroelectric power. EPA's calculation of Oregon's current energy efficiency savings uses the Energy Information Agency (EIA) state data, which includes all energy efficiency savings within the state. EPA's inclusion of these resources innately recognizes the emission reduction characteristics of energy efficiency measures placed on utility systems served by FCRPS. In order to reach the emission rate goal set by EPA, Oregon will need to similarly use all tools at its disposal including all energy efficiency acquired within the state.

As described in Section II (A), BPA markets and distributes power from the FCRPS across four states, 142 utilities, and serves 30 percent of the Northwest's power needs. Since 1980, BPA and its customer utilities have invested heavily in energy efficiency.[16] These investments were made in large part to offset future costs associated with the purchase of marginal power and new resources, which are fossil-fired.[17] Since 2005, cumulative savings regionally from energy efficiency improvements in the hydroelectric power system are nearly 1,500 aMW, which significantly dampen regional load growth and, for some utilities, may be completely offsetting load growth.

In addition, in accordance with statutory and regulatory directives, customers of Pacific Power and Portland General Electric fund energy efficiency measures through the Energy Trust of Oregon (ETO), an independent, third party non-governmental organization that serves roughly 70 percent of electric customers in Oregon. Over the past 12 years, ETO has acquired 3,819,360 MWhs (436 aMW) in electric energy savings.[18] In 2013, the levelized costs for energy efficiency savings were 2.4 cents per kilowatt hour (kWh).[19] As part of the larger WECC-wide

---

[15] *See* Appendix 6: Background on unique hydroelectric power sector in Oregon and the Northwest.
[16] This investment is equal to roughly 5,300 aMW, which is enough to power the state of Oregon. Memorandum from Tom Eckman and Gillian Charles to the Northwest Power and Conservation Council regarding 2012 Regional Conservation Achievements and Projections for 2013-2015 (January 7, 2014), *available at* http://www.nwcouncil.org/media/6914345/8.pdf.
[17] *See, generally,* NWPCC SIXTH POWER PLAN; *supra* note 5, at chapters three and four.
[18] *See* ENERGY TRUST OF OREGON, 2013 ANNUAL REPORT TO THE OREGON PUBLIC UTILITY COMMISSION AND ENERGY TRUST BOARD OF DIRECTORS 7 (April 15, 2014), *available at:* http://energytrust.org/library/reports/2013_ETO_Annual_Report.pdf.
[19] *See id.*

interconnected power system, Oregon's energy efficiency measures, funded through significant Oregon ratepayer investment,[20] have reduced the use of WECC fossil-fuel generation.[21]

B. *Recommendation: EPA should adopt a consistent compliance approach requirement where the state that implements energy efficiency measures will claim the resulting emission reductions in its state compliance plan.*

1. Oregon Does Not Support the Energy Efficiency "Track Back" to the Electric Generating Unit (EGU) Compliance Approach in the Preamble.

EPA's base proposal[22] for energy efficiency attribution would render energy efficiency programs ineffective in the state because Oregon could only claim as little as 12 percent of the emission reductions resulting from all of its demand side energy efficiency investments.[23] This language in the preamble would limit attribution of emission reductions associated with energy efficiency in a state compliance plan to only the portion of the energy savings that could be "tracked back"[24] to affected in-state EGUs. Further, the Proposal does not appear to require a similar "track back" requirement for renewable energy. EPA requires only energy efficiency to demonstrate a direct causal relationship between the energy efficiency acquired and the resultant reduction in a specific EGU's operation. In Oregon, this approach would likely result in energy efficiency no longer being considered a cost-effective emissions reduction strategy because only a small fraction of the energy savings can be attributed to reduction of emissions at in-state EGUs.

EPA has identified eight fossil-fuel EGUs in Oregon that are subject to the Proposal. Five of these EGUs are owned by Oregon's investor-owned utilities and are, in part, used to serve a portion of their Oregon loads.[25] While Oregon is an importer of significant carbon intensive generation, EPA has characterized Oregon as a net exporter of generation, largely because of FCRPS generation. As a result of Oregon's net-exporter status, EPA does not apply a net import factor to Oregon's Block Four BSER determination, resulting in an unadjusted Block Four goal

---

[20] *See, id.* at 23. *See, also,* BONNEVILLE POWER ADMINISTRATION, CONSERVATION RESOURCE ENERGY DATA 15 (2011), *available at* http://www.bpa.gov/EE/Utility/research-archive/Documents/RED_Book_FY11_FINAL.pdf

[21] *See* NWPCC SIXTH POWER PLAN, *supra* note 5, at chapters three and four. *See, also,* Memorandum from Tom Eckman to the Northwest Power and Conservation Council regarding Sixth Plan CO2 Emissions Forecast Compared with EPA's Proposed Emission Limits for Existing Generating Facilities (July 29, 2014) *available at* https://www.nwcouncil.org/media/7119845/4.pdf

[22] *See* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34829, 34922 (proposed June 10, 2014) (to be codified at 40 C.F.R. pt. 60) [hereinafter EPA PROPOSAL]. *See, also,* U.S. ENVIRONMENTAL PROTECTION AGENCY OFFICE OF AIR AND RADIATION, STATE PLAN CONSIDERATION TECHNICAL SUPPORT DOCUMENT 87 (June 2014) *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-state-plan-considerations.pdf [hereinafter STATE PLAN TSD].

[23] For a spreadsheet and further details about this calculation, *see* Appendix 2: Calculation of 12 percent of energy efficiency emission reductions credited to Oregon under "Track Back" to EGU Compliance Approach in the Preamble.

[24] EPA staff used the term "tracked back" during clarifying discussion, which Oregon uses herein for consistency.

[25] According to Oregon PUC Order Number 10-457 in Docket LC 48 at the Oregon Public Utility Commission in 2010, the Boardman Generating plant, Oregon's only coal fired generator, will close at end of 2020. The remaining seven existing generating units are natural gas plants. Two of these generators are owned by independent power producers, leaving five that are owned by Oregon IOUs.

that represents 1.5 percent of *all statewide* load. On average, however, these five in-state, investor-owned EGUs only make up roughly 12 percent of the total generation used to serve Oregon load.

Only 12 percent of Oregon's load is served by in-state, investor-owned, fossil-fuel EGUs in part because much of the remaining load is served by fossil generation imported from EGUs in other states. Oregon's load is also served by renewable generation or generation from the carbon dioxide-free FCRPS, which do not have EGUs subject to the Proposal. EPA's base proposal would allow Oregon to "take into account in its plan *only* carbon dioxide emission reductions occurring (or projected to occur) in the state that results from demand-side EE measures in the state."[26] Thus, under EPA's construct, as much as 88 percent of energy efficiency measures funded by Oregon customers are deemed to result in emissions reductions occurring in other states.

Oregon has been committed to energy efficiency since the 1980s and has received national recognition for its efforts and results. It has been consistently named one of the top five states for energy efficiency efforts.[27] Measures in place now will continue to save energy into the proposed 2020-2029 compliance period.[28] If Oregon's compliance plan included "only those carbon dioxide emission reductions occurring in the state that result from demand-side energy efficiency programs and measures implemented in the state,"[29] it would be extremely difficult and unnecessarily costly to meet the 2030 goal set by EPA.

This approach would affect the cost-effectiveness and overall continued use of energy efficiency in Oregon. If an Oregon energy efficiency investment can only claim 12 percent of its resulting emission reductions, then demonstrating cost-effectiveness of that energy efficiency investment would not be viable. Also, in the case where a mass-based system of compliance is utilized by a state exporting power to Oregon, the remaining 88 percent of emission reductions may be surrendered to states whose ratepayers did not make that long-term investment in energy efficiency – resulting in an unfair transfer of hundreds of millions of dollars of ratepayer investment.[30] While Oregon has long determined energy efficiency measures to be the most-sought after and least cost energy resource, under EPA's base proposal, energy efficiency measures would be relegated to the least-sought after and most-costly resource.

If EPA cannot allow Oregon to take full credit for in-state energy efficiency investments, thereby enabling Oregon to find parity in mechanisms used in goal setting and compliance, then one solution could be for EPA to revisit Oregon's Block Four emissions reduction goal computation. However, given the multiple implications described in this section, it would not be sufficient to

---

[26] EPA PROPOSAL, *supra* note 22, at 34922.
[27] *See* American Council for an Energy-Efficient Economy, The State Energy Efficiency Score Card (2013), *available at* http://aceee.org/state-policy/scorecard
[28] For a graphical representation of the energy efficiency supply curve *see* Appendix 1: Renewable Energy and Energy Efficiency Resource Portfolio. *See, also,* Northwest Power and Conservation Council, Energy Efficiency in the Future: The Sixth Northwest Power Plan (2010), *available at:* https://www.nwcouncil.org/media/30092/2012_06.pdf
[29] STATE PLAN TSD, *supra* note 22, at 87.
[30] *See* ENERGY TRUST OF OREGON, *supra* note 18, at 23. *See, also*, BONNEVILLE POWER ADMINISTRATION, CONSERVATION RESOURCE ENERGY DATA 15 (2011), *available at* http://www.bpa.gov/EE/Utility/research-archive/Documents/RED_Book_FY11_FINAL.pdf

simply adjust this goal to account for the fact that only a small percentage of in-state energy efficiency can be used for compliance, as this would retain the disincentives for further energy efficiency investment.

2. Instead, Oregon Supports the Compliance Approach Outlined in the State Plan Considerations TSD whereby the State that Implements Energy Efficiency Measures Will Claim the Resulting Emission Reductions in its State Compliance Plan.

The compliance approach outlined on page 88 of the State Plan Considerations Technical Support Document,[31] whereby the state that implements energy efficiency measures may claim the resulting emission reductions, should be used in lieu of the approach described in the preamble for several reasons. This approach would accurately credit and incentivize energy efficiency investment in Oregon and other states that import fossil-fuel energy, thereby allowing Oregon to continue to use its energy efficiency infrastructure as a tool for compliance. This approach also provides parity between the mechanisms used to develop the BSER Block Four goal and compliance mechanisms available to Oregon and similarly situated states.

Furthermore, this approach will not result in double counting if it is combined with the recommendation in Section III, to require states using a mass-based compliance plan to account for emission reduction activities occurring in other states. Emission reductions resulting from energy efficiency measures can be demonstrated using regional average or marginal emission rates as discussed below. In addition, this approach may provide an incentive for states that serve Oregon load in the WECC to participate in a multi-state compliance approach.

C. Recommendation: EPA should allow states to credit end use efficiency measures that reduce demand on the carbon-free hydroelectric power system and subsequently offset fossil fuel generated power as emission reduction measures in a state compliance plan.

Energy efficiency reduces the need to generate electricity.[32] Economic dispatch of generating resources generally means that resources with incremental fuel costs, primarily fossil-fuel generation, will be the first resources to curtail generation in response to lower demand as a result of energy efficiency measures. Even when energy efficiency is acquired in an Oregon utility territory served by the carbon emission-free FCRPS, that reduction in demand will reduce output from fossil-fuel generation throughout region. EPA should allow Oregon to credit these energy efficiency investments in its compliance plan.[33]

EPA's methodology for calculating Oregon's building Block Four goal sends the correct signal to customers served by Oregon's consumer-owned utilities using the hydroelectric power system because their energy efficiency measures result in reduce emissions from fossil generation within

[31] "State that implements the measure claims the emissions reduction benefit. Under this approach, the State that implements the measure..., claims the avoided CO_2 emissions regardless of where they occur." STATE PLAN TSD, *supra* note 22, at 88.

[32] "Each aMW of unachieved conservation would increase average net annual CO2 production by about 6,700 tons per year." NORTHWEST POWER AND CONSERVATION COUNCIL, CARBON DIOXIDE FOOTPRINT OF THE NORTHWEST POWER SYSTEM 11 (2007), *available at* https://www.nwcouncil.org/energy/powerplan/5/2007-15/

[33] For additional background on how energy efficiency measures affect the carbon-free hydroelectric power system, *see* Appendix 6: Background on unique hydroelectric power sector in Oregon and the Northwest.

the entire WECC region. For parity between this appropriate construction of Block Four in the BSER and a state compliance plan, Oregon must take full credit for its energy efficiency investments on the hydroelectric power system regardless of whether the emission reductions are directly attributable to in-state fossil-fuel generation resources. This approach allows for continued recognition of energy efficiency measures' influence on the carbon intensity resource mix within the WECC region and signals that energy efficiency investments that affect demand on the hydroelectric power system should continue in Oregon.[34]

D. *Recommendation: For crediting emission reductions resulting from energy efficiency measures, EPA should allow each state to assign an emission reduction value equal to the emissions rate of the power pools' marginal resources.*

Oregon recommends that, in its final rule, EPA should include a crediting framework for emission reductions resulting from energy efficiency measures that complements the double-counting solution described in Section III. Each power pool and, therefore, each state within that power pool, should use a rate reduction value based on the resource mix serving that power pool at the margin. The rate reduction value could then be used as part of energy efficiency compliance in state plans within that power pool.

In response to EPA's proposal on page 34919-34920, Oregon believes that each state should be allowed to use the marginal hourly emissions rate (averaged over a year) from its power pool when assigning an emission reduction value to energy efficiency. Energy efficiency is not dispatchable. It reduces demand during the year with the hourly reductions dependent on the type of energy efficiency measure. Furthermore, because of the interconnected nature of power pools, energy efficiency investments in one state affect the utilization of power plants in other states. Thus, each state's load reductions will displace regional resources. Allowing a state to credit energy efficiency with its power pool's marginal emission rate recognizes the full breadth of regional effects from energy efficiency investments. In the Northwest many of the generation resources dispatched downward with a load reduction are not located in-state. Instead, much of the emission reductions from changes in Oregon load are from marginal fossil-fueled resources elsewhere in the West. It is therefore reasonable to credit Oregon's energy efficiency with an emission rate that reflects the marginal resources in the West. Oregon recommends that states should be required to demonstrate the reasonableness of the marginal emission rate that they propose in state plans to EPA.

E. *Recommendation: EPA should clarify how compliance measures involving federal entities, such as BPA, may be incorporated in a state compliance plan to leverage federal investments in emission reductions from energy efficiency.*

BPA makes significant investments in energy efficiency and in incremental hydroelectric power generation. These investments produce measureable and verifiable emission reductions. Because

---

[34] *See* BONNEVILLE POWER ADMINISTRATION, CASE FOR CONSERVATION: AN EXAMINATION OF THE REGIONAL, UTILITY AND CONSUMER PERSPECTIVES OF THE ECONOMIC IMPACT OF ENERGY EFFICIENCY (2013) *available at* http://www.bpa.gov/EE/Utility/toolkit/Documents/CaseForConservation_Final.pdf. *See, also,* HOPPER ET AL, ENERGY EFFICIENCY IN WESTERN UTILITY RESOURCE PLANS: IMPACTS ON REGIONAL RESOURCE ASSESSMENT AND SUPPORT FOR WGA POLICIES (2006) *available at* http://emp.lbl.gov/publications/energy-efficiency-western-utility-resource-plans-impacts-regional-resource-assessment-a

BPA is a federal entity, states have limited ability to enforce adherence to an investment plan in energy efficiency and renewable energy. If a state compliance plan is ultimately federally enforceable, EPA should clarify whether this federal enforceability extends to renewable energy and energy efficiency compliance measures that occur through actions of federal entities such as BPA. Another solution may be for EPA to allow states to set obligations on consumer-owned utilities that are then acted upon by a federal entity, while state enforceability is retained on the utilities themselves. This is a less efficient method for state compliance, and Oregon recommends that EPA help states develop an approach to directly include emission reductions achieved by federal entities such as BPA.

F. ***Recommendation: EPA should allow states to credit energy savings from demand response measures, enforcement of building codes, federal and state appliance standards, and market transformation in a state compliance plan through robust evaluation, measurement, and verification protocols.***

As stated in the Proposal, Oregon agrees that EPA should open a discussion with states about Evaluation, Measurement and Verification (EM&V) to credit demand response, enforcement of building codes, federal and state appliance standards, and market transformation in state compliance plans.[35] With regard to EPA's statement that building codes and appliance standards, "have not typically been subject to similar evaluation of energy savings results"[36] Oregon offers a nuanced perspective. States should be allowed to include the energy savings of such measures in their state compliance plans if they can demonstrate robust development and application of EM&V standards for enforcement of building codes and for state appliance standards.[37] In addition, emission reductions resulting from demand response measures deserve separate treatment and analysis because they are not a type of demand-side energy efficiency measure, but rather they are a separate category of measures that can shift load to a different time of day.

There should not be national uniformity in EM&V practices and protocols for purposes of demonstrating energy efficiency savings in state compliance plans. Practices should be normalized where possible, and each state or region should develop EM&V protocols for measures that follow best known and acceptable practices. For those states and regions such as the Northwest, California, or the Regional Greenhouse Gas Initiative (RGGI) states, where energy efficiency practices are more mature, EPA should be careful not to create barriers to development of advanced measurement technologies.

For those states that have not had substantial practice verifying energy efficiency savings, EPA should offer technical assistance in program development. Subsequent to the final Clean Power Plan next year EPA should begin a process to develop best practices for EM&V, which those states can use as a tool to develop their own robust EM&V practices and protocols.

[35] "The EPA and its federal partners intend to discuss the development of appropriate EM&V protocols for such measures with states in the coming years." EPA PROPOSAL, *supra* note 22, at 34921.
[36] *Id.*
[37] *See* Appendix 15: Background on Evaluation, Measurement, and Verification.

1. Emission reductions resulting from Market Transformation should be an acceptable component of a state compliance plan.

The Northwest Energy Efficiency Alliance's (NEEA) Total Regional Savings (TRS) is the best expression of market transformation energy savings and how the region tracks the market transformation programmatic energy savings from traceable and verifiable measures.[38] As NEEA efforts transform a market, whether for an appliance, energy efficient business practices, or building code adoption, NEEA tracks the resulting energy savings within the market.[39] NEEA's TRS energy savings conform to the best practices for measuring and verifying savings. EPA should allow Oregon and the other Northwest states served by NEEA to credit energy savings from NEEA's market transformation efforts in its state compliance plan.

2. Emission reductions resulting from Appliance Standards should be an acceptable component of a state compliance plan.

Oregon tracks programmatic energy savings from purchases of appliances that meet federal or more stringent state appliance efficiency standards.[40] States can induce and track the sale and installation of new appliances meeting the federal standards through programmatic measures. The actual effects of new federal efficiency appliance standards should be an allowable element in state plans. Where a state can demonstrate energy savings from efforts to advance appliance standards, Oregon recommends that state should be permitted to include energy savings from appliance standards as emission reduction measures in its compliance plan. For those state efforts done prior to federal rulemaking such action should be credited for the remaining life of the measure under the final Proposal. Finally, EPA should recognize that efforts in the Northwest and California have advanced appliance standards ahead of federal efforts. The final Clean Power Plan should clarify that these state efforts will not lower the state's baseline for calculating energy savings from a newly adopted federal appliance standard. To do otherwise would create disincentives for states to adopt state appliance efficiency standards.

3. Emission reductions resulting from enforcement of energy efficient building codes that are demonstrated with rigorous EM&V measures should be an acceptable component of a state compliance plan.

Oregon understands why EPA might assert that building code standards "have not typically been subject to similar evaluation of energy savings results,"[41] but this is not the case in Oregon and the Northwest.[42] The NWPCC has been studying the impacts of energy efficiency policies, including utility and third party energy efficiency programs, state building energy codes, and federal appliance standards across their member states, Idaho, Montana, Washington, and Oregon, for more than three decades. For the past decade, energy efficiency programs have

---

[38] *See* Appendix 7: Background on NEEA and Market Transformation.
[39] For example, *see* NORTHWEST ENERGY EFFICIENCY ALLIANCE, NORTHWEST DUCTLESS HEAT PUMP INITIATIVE: MARKET PROGRESS REPORT #3, *available at* http://neea.org/docs/default-source/reports/northwest-ductless-heat-pump-initiative--market-progress-evaluation-report-3.pdf?sfvrsn=4
[40] *See* Appendix 8: Background on Oregon and the Northwest leadership in Appliance Standards.
[41] EPA PROPOSAL, *supra* note 22, at 34921.
[42] *See* Appendix 10: Background on Building Codes and Building Code Adoption and Compliance.

accounted for "more than 75 percent of the cumulative energy savings with building energy codes accounting for the remaining savings."[43]

EPA should credit savings from state programs that advance building code compliance and enforcement. Oregon recommends that EPA work with states on savings measurement methodology for building codes.[44] Further, Oregon recommends EPA work with the U.S. Department of Energy's Building Energy Codes Program, which is currently developing methodologies to advance building code compliance and savings verification. In Oregon, however, robust EM&V methodology is in place to demonstrate incremental savings from building code compliance, and EPA should allow Oregon to credit resulting energy savings in its state compliance plan.

4. Emission reductions resulting from Demand Response measures should be an acceptable component of a State Compliance Plan.

EPA should give special attention to demand response and separate its treatment for emission reduction credit from energy efficiency under the broad category of demand-side measures.[45] Demand response is a category and not a single type of demand-side measure. It can be used for the development of several types of measures capable of reducing load at specific times. Demand response is capable of reducing peak demand. It can also move load from a time of higher incremental emissions to a time when emissions are lower so that overall emissions are reduced. Demand response has the effect of increasing shoulder hour energy use and is capable of supplying load drop, load balancing, and spinning reserves for ramp up or ramp down requirements. EPA should initially work with a range of Independent System Operators, Regional Transmission Operators, and the Federal Energy Regulatory Commission (FERC) to better understand the emission reduction opportunities presented by using this unique demand side measure. Where a state can demonstrate its demand response programs offset fossil-fueled balancing resource within the power pool serving the state, or where demand response shifts loads to a time of lower marginal carbon dioxide emissions, EPA should give credit for the carbon dioxide reductions from those measures.

VI. KEY CONSIDERATIONS RELATED TO TIMING AND ADMINISTRATIVE CONCERNS

The schedule anticipated in the Proposal - a final rule in June 2015 with states' plans due a year later - is ambitious and will require EPA to continue the unprecedented strong outreach and support it has provided states since issuing the proposal. The opportunity for extending this schedule as contemplated in the Proposal will likely prove important for Oregon as its legislature convenes a full session every other year. Any new legislation required for enforcement of elements in Oregon's state plan will likely have to wait until the legislature's session in the first half of 2017.

---

[43] U.S. ENVIRONMENTAL PROTECTION AGENCY OFFICE OF AIR AND RADIATION, GHG ABATEMENT MEASURE TECHNICAL SUPPORT DOCUMENT, 5-10 (June 2014) *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-ghg-abatement-measures.pdf

[44] *See* Appendix 11: Northwest Accounting of Building Code and Appliance Standards Savings for a graph showing that State Energy Codes and Federal Standards Reduced 2010 Regional Retail Sales by Approximately 2300 aMW.

[45] *See* Appendix 14: Background Information regarding Demand Response measures.

A. Recommendation: EPA should develop a timeline and approach for periodic re-evaluation of the BSER.

EPA should consider developing a timeline and approach for periodically re-evaluating this regulation. Similar to the 8-year reevaluations done for New Source Performance Standards, EPA could periodically reassess the BSER to ensure it continues to reflect the range of measures that have been adequately demonstrated to reduce carbon dioxide emissions from power plants. This reevaluation might also provide a mechanism for updating the fleet of facilities subject to the regulation so that it does not gradually decline into irrelevance but instead continues to achieve significant emission reductions from fossil-fuel power plants.

B. Recommendation: EPA should clarify that states may cooperate regionally without blending state goals into a regional goal, expand options to explicitly allow for a variety of multi-state arrangements, and allow for updates to state compliance plans if later multi-state agreements emerge.

Oregon has yet to consider potential multi-state plan opportunities, but these might offer more cost-effective and greater emission reductions and thus provide an appealing option as compliance pathways are considered. EPA should clarify that states can cooperate regionally without blending state goals into a regional goal, and expand the options to explicitly allow for multi-state arrangements beyond a cap-and-trade system to encourage multi-state compliance to the Proposal. EPA should include in the final plan specific multi-state arrangements that could be pre-approved and provide model bi-state agreements for coordinating specific plan elements, such as methods to allocate compliance credit for emission reductions from energy efficiency. Providing states with off-the-shelf plan elements that are essentially pre-approved would save states valuable time developing these measures, provide greater consistency in how the Clean Power Plan is implemented across the country, and make it more likely that states are able to attain the more cost-effective emission reductions that may be achievable through multi-state coordination. Finally, EPA should allow states to enter into multi- or bi-state agreements after the compliance period has begun and make the associated updates to their compliance plans, as cost-effective opportunities for such collaboration may become available as states begin implementing the requirements of the final Clean Power Plan.

VII. CLOSING REMARKS

Oregon applauds EPA for developing the proposed Clean Power Plan in a manner that identifies the least cost methods for reducing greenhouse gas emissions in the power sector by accounting for non-emitting sources of generation and energy efficiency. Oregon sincerely hopes its recommendations are incorporated in the final Clean Power Plan so that its state plan can reasonably and correctly account for the emission reductions achieved by Oregon investments in these areas. In particular, Oregon strongly recommends that all energy efficiency and renewable generation should be credited to the state that pays for these measures.

Oregon DEQ, in cooperation with ODOE and the Oregon PUC, look forward to working with EPA as this proposal is finalized over the next year and as the Oregon state compliance plan is developed.

I understand there has already been significant communication between Oregon agencies and staff at EPA, and we may provide supplemental comments prior to the December 1 deadline, but

please do not hesitate to contact me directly to follow-up on any of the comments contained in this letter.

Dick Pedersen

10-16-2014

Dick Pedersen, Director
Oregon Department of Environmental Quality

Date

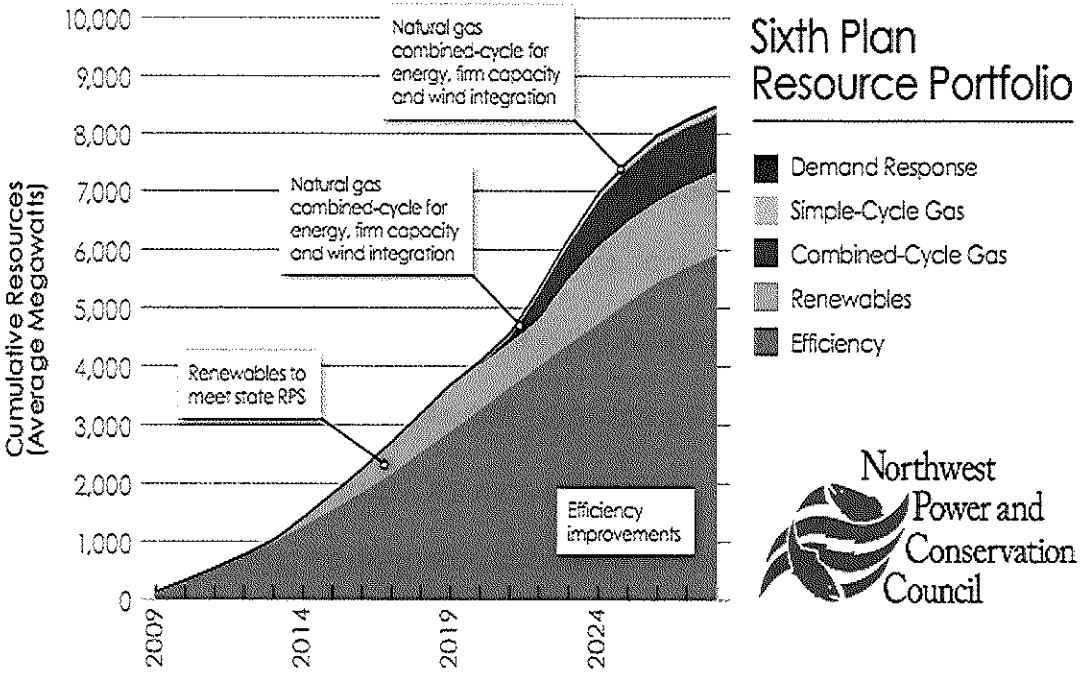
Cc:
Michael Kaplan, Acting Director
Oregon Department of Energy

Jason Eisdorfer, Utility Program Director
Oregon Public Utility Commission

LIST OF APPENDICES

APPENDIX 1
Renewable energy and energy efficiency resource portfolio

In Oregon, and the Northwest more broadly, renewable energy and energy efficiency provide two of the most significant methods for reducing greenhouse gas emissions from the power sector. This graph shows the Northwest's Sixth Power Plan supply curve through 2029. Energy efficiency is acquired first and in greater quantity than any other resource.



APPENDIX 2

Calculation of 12 percent of energy efficiency emission reductions credited to Oregon under "Track Back" to Electric Generating Unit (EGU) compliance approach in the preamble

This appendix shows a calculation demonstrating Oregon's understanding of EPA's base proposal for crediting energy efficiency in state compliance plans. As described on page 13 of the comment letter, Oregon understands EPA's base proposal to mean that Oregon may be able to take credit for only 12 percent of its energy efficiency investment in its state plan. This is due to the requirement in the base proposal to "track back" energy savings from an energy efficiency measure to a specific EGU that is reducing output as a result of that measure.

EPA has identified eight fossil-fueled EGUs in Oregon that are subject to the Proposal. Of those eight EGUs, five are investor-owned generators and, on average, only make up roughly 12 percent of the total generation used to serve Oregon load. The remaining three are owned by independent power producers (IPPs), and when those generators are included with the IOU units and compared against EPA's calculated total Oregon generation of 50,195,189 MWh, the EGU units subject to EPA's proposal represent on average 21.39 percent - only a portion of which serves Oregon load. It is not possible to know for sure whether the output of the IPP generators is used to serve Oregon load. The remaining fossil generation used to serve Oregon load is imported from other states.

If Oregon can only take credit for emission reductions occurring at in-state EGUs that result from energy efficiency measures in the state, then it follows that Oregon may only take credit for up to 22 percent of its energy efficiency investment in its state compliance plan. Because Oregon cannot be sure of whether the output from the state's IPP generators serve load, and if the EPA proposal requires that Oregon "track back" the abatement effects of its investment in energy efficiency to the affected in-state generators, then at worst Oregon could only to take credit for roughly 12 percent of its energy efficiency investment in a compliance plan.

APPENDIX 2 (continued)

Credit for In-state EE Abatement if tracked back to EGU

EE investment for 111(d) EGU abatement purposes can be more readily tracked back to units owned by the utility. The table below demonstrates that EE investments on the existing IOU, COU system would conservatively have an abatement value of 12%. If we can show that those in-state EGUs owned by Calpine and Klamath are 100% dedicated to in-state load we could take upwards of 22% credit for EE measures. However, given that EPA says that we must "track back" abatement measure to the affected EGUs, a conservative assumption, using our current understanding of the EPA rule, would allow us only a 12% credit for EE measures. If Carty were added as a 111(d) resource then these number would need to be readjusted.

2012 EPA/EIA Data

EPA Listed 111(d) NG Plants	Ownership Type	Generation MWh 2012	Percentage In-state of in-state Generation	Generation Owned by IOU, COU	Percentage of In-state generation, IOU, COU	Generation as calculated by EPA	Total Sales 2012
Beaver	PGE	25,474	0.05%	25,474	0.05%	50,195,189	47,200,000
Coyote Springs	Avista	1,127,834	2.25%	1,127,834	2.25%	50,195,189	47,200,000
Coyote Springs II	PGE	1,142,118	2.28%	1,142,118	2.28%	50,195,189	47,200,000
Hermiston Generating Plant	PAC	2,285,944	4.55%	2,285,944	4.55%	50,195,189	47,200,000
Hermiston Power Partnership	Calpine, (PAC)	2,888,903	5.76%			50,195,189	47,200,000
Klamath Cogeneration Plant	Iberdrola	2,224,837	4.43%			50,195,189	47,200,000
Port Westward	PGE	1,729,181	3.44%	1,729,181	3.44%	50,195,189	47,200,000
Total		**11,424,291**	**22.76%**	**6,310,551**	**12.6%**	50,195,189	47,200,000

2011 EPA/EIA Data

EPA Listed 111(d) NG Plants	Ownership Type	Generation MWh 2011	Percentage In-state of in-state Generation	Generation Owned by IOU, COU	Percentage of In-state generation, IOU, COU	Generation as calculated by EPA	Total Sales 2011
Beaver	PGE	46,963	0.04%	46,963	0.04%	59,695,164	47,171,446
Coyote Springs	PGE, Avista	1,399,034	1.89%	1,399,034	1.89%	59,695,164	47,171,446
Coyote Springs II	PGE, Avista		1.91%	-	1.91%	59,695,164	47,171,446
Hermiston Generating Plant	PAC	2,309,477	3.83%	2,309,477	3.83%	59,695,164	47,171,446
Hermiston Power Partnership	Calpine	1,155,919	4.84%			59,695,164	47,171,446
Klamath Cogeneration Plant	Iberdrola	2,040,453	3.73%			59,695,164	47,171,446
Port Westward	PGE	1,392,219	2.90%	1,392,219	2.90%	59,695,164	47,171,446
Total		**8,344,065**	**19.14%**	**5,147,693**	**9%**	59,695,164	47,171,446

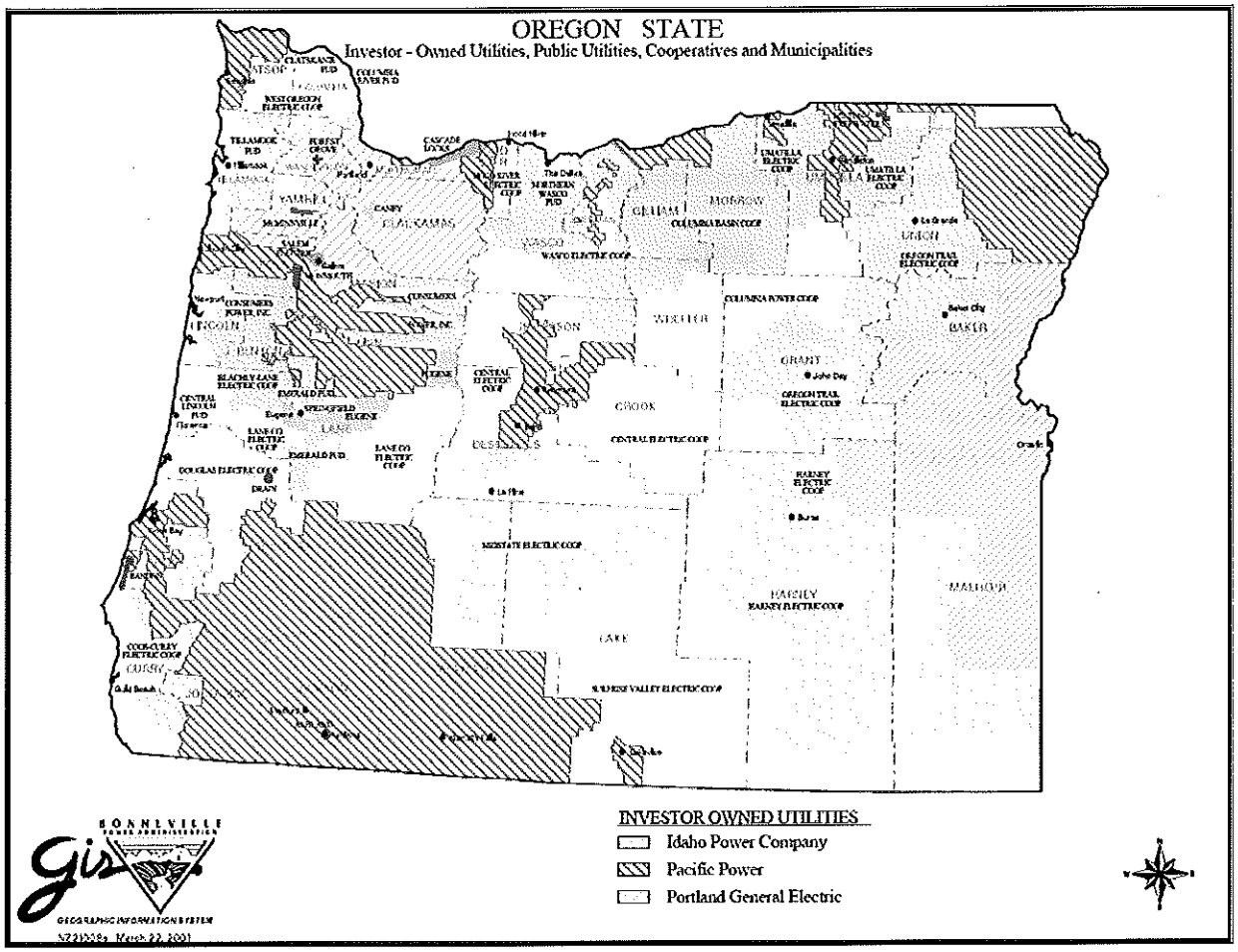
APPENDIX 2 (continued)[1]

		2010 EPA/EIA Data					
EPA Listed 111(d) NG Plants	Ownership Type	Generation MWh 2010	Percentage In-state of in-state Generation	Total in-state Generation Owned by	Percentage of In-state generation, IOU, COU	Total In-state Generation as	Total Sales 2010
Beaver	PGE	156,620	0.28%	156,620	0.28%	55,126,999	46,025,945
Coyote Springs	PGE, Avista	3,218,147	5.84%	3,218,147	5.84%	55,126,999	46,025,945
Coyote Springs II	PGE, Avista		0.00%	-	0.00%	55,126,999	46,025,945
Hermiston Generating Plant	PAC	3,193,786	5.79%	3,193,786	5.79%	55,126,999	46,025,945
Hermiston Power Partnership	Calpine	3,241,573	5.88%			55,126,999	46,025,945
Klamath Cogeneration Plant	Iberdrola	2,969,995	5.39%			55,126,999	46,025,945
Port Westward	PGE	2,745,177	4.98%	2,745,177	4.98%	55,126,999	46,025,945
Total		**15,525,298**	**28.16%**	**9,313,730**	**16.90%**	55,126,999	46,025,945
		2012,2011,2010 Three Year Average EPA/EIA Data					
Three Year Average		***11,764,551***	***21.39%***	***6,923,991***	***12.6%***	***55,005,784***	***46,799,130***

[1] Oregon state agency staff generated calculation spreadsheet.

APPENDIX 3
Map of Oregon electric utility service territories

This map shows the Electric Utility Service Territories in Oregon and demonstrates the diversity of suppliers and the importance of the consumer-owned utilities in Oregon's electricity resource mix.



APPENDIX 4
Oregon electric supplier background information[1]

Three investor-owned electric utilities operate in Oregon. Investor-owned electric utilities provide service to approximately 74 percent of the customers in the state.

The average annual kilowatt hour (kWh) consumption of residential customers for Oregon operations of investor-owned electric utilities is as follows:

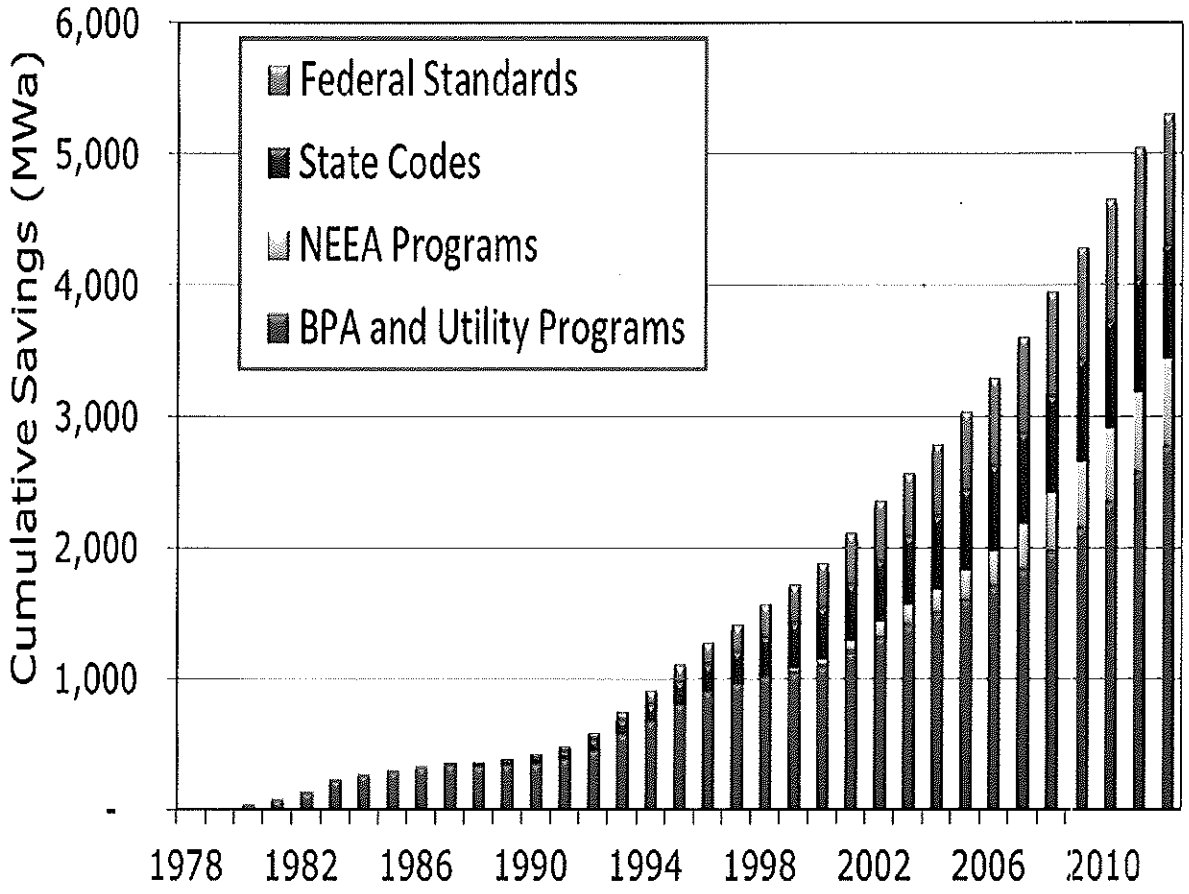
	2013	2012	2011	2010	2009
Investor-Owned Electric Utilities	11,022	10,818	11,213	10,902	11,504

The following types of electric suppliers served electric customers in Oregon on December 31, 2013:

Type of Electricity Supplier	Number	kWh Sales in Oregon (%)	Customers in Oregon (%)
Investor-Owned	3	66.4	73.9
Electricity Service Suppliers (ESS)[1]	4	3.8	< 0.1
Cooperative[2]	19	10.5	10.6
Municipal-Owned[2]	12	10.5	9.6
People's Utility District[2]	6	8.8	6.0

[1] OREGON PUBLIC UTILITY COMMISSION, 2013 OREGON UTILITY STATISTICS BOOK, *available at* http://www.puc.state.or.us/docs/statbook2013.pdf

APPENDIX 5
Oregon historical cumulative savings from various energy efficiency measures[2]



[2] Tom Eckman, Northwest Power and Conservation Council, Appliance Standards and Conservation Presentation (2014), *available at* http://www.bpa.gov/EE/NewsEvents/presentations/Documents/FedStdsImpact_BPABrownBag_090414.pptx

APPENDIX 6
Background on unique hydroelectric power sector in Oregon and the Northwest

About 60 percent of the region's hydroelectric generating capacity is operated on the 31 federally owned dams on the Columbia River, Snake River, and its tributaries that comprise the Federal Columbia River Power System (FCRPS).[3] The U.S. Army Corps of Engineers and the Bureau of Reclamation own and operate these dams while the Bonneville Power Administration (BPA) markets the power generated at these federal dams and from the Columbia Generating Station (the Northwest region's only nuclear reactor located in Washington) at cost to the region's consumer-owned utilities. In good water years, surplus power is sold in and outside the region.[4]

The Northwest Power Planning and Conservation Council (NWPCC) is the Northwest entity charged with long term power planning. NWPCC has found that from year to year carbon dioxide production from the regional power system fluctuates.[5] This fluctuation is directly related to stream flow and power demand. In Oregon and the Northwest, "carbon dioxide production from electricity generation is dominated by existing coal-fired generating plants . . . stabiliz[ing] carbon dioxide production levels would require substituting low carbon dioxide producing resources or additional conservation for some of these existing coal-fired power plants."[6] The NWPCC also found that under normal water conditions the Northwest would have produced about 520 pounds of carbon dioxide for each megawatt of electricity generated, compared to 900 pounds for the entire Western interconnected power system. The Northwest power system represents roughly 15 percent of the total WECC carbon dioxide production.[7]

Consistent with the Northwest Power Act of 1980, the states in the Northwest were the first in the country to treat energy efficiency as a generating resource. When the NWPCC sets an energy efficiency acquisition target, BPA has a corresponding obligation under the Act to implement efficiency measures and acquire resources "consistent" with the NWPCC's power plan, including energy efficiency targets.[8] BPA complies with this obligation by assessing an energy efficiency adder in rates to fund and administer energy efficiency measures on the hydroelectric system. For the rest of the region, the targets are important for planning and other reasons, but without the same legal obligation.

As a result of collective long term strategy, the Northwest region's average generating resource continues to be carbon free, and the portion of the Northwest and Oregon served by this shared

---

[3] BONNEVILLE POWER ADMINISTRATION, FEDERAL COLUMBIA RIVER POWER SYSTEM (2003), *available at* www.bpa.gov/news/pubs/GeneralPublications/fcrps_Federal%20Columbia%20River%20Power%20System.pdf
[4] BONNEVILLE POWER ADMINISTRATION, HOW THE FEDERAL COLUMBIA RIVER POWER SYSTEM WORKS FOR YOU (2010), *available at* www.bpa.gov/news/pubs/GeneralPublications/fcrps-Hydropower.pdf
[5] NORTHWEST POWER AND CONSERVATION COUNCIL, CARBON DIOXIDE FOOTPRINT OF THE NORTHWEST POWER SYSTEM (2007), *available at* https://www.nwcouncil.org/energy/powerplan/5/2007-15/
[6] *Id.* at 3. *See, also, id.* at 8 ("Though the aggressive acquisition of conservation and renewable resources called for in the Fifth Power Plan will hold the rate of growth in Northwest carbon dioxide production to half the growth rate experienced from 1990 through 2004, serious efforts to reduce or even stabilize carbon dioxide production beyond 2005 will likely require replacing existing coal-fired power plants with low carbon dioxide -emitting resources.").
[7] *Id.* at 8.
[8] Northwest Power Act of 1980, 16 U.S. Code § 839d(a)(1).

resource has delayed the need to invest in costly fossil fuel resources.[9] When these utilities invest in energy efficiency, the effect is long lasting and multifaceted. The life span of the shared hydro system and its capabilities for other uses is extended when Oregon ratepayers invest in energy efficiency. Each megawatt of energy efficiency allows the megawatts produced by the hydro system to balance wind generation or sell power on the margin where fossil fuel generated power might otherwise have been purchased. Investment in energy efficiency on the FCRPS frees up megawatts to be used in other areas of the country that would have otherwise purchased carbon intensive power.

The energy efficiency investments made in Oregon affects the dispatch of the resources in Montana, Utah, and Wyoming that serve the Oregon load. However, because Oregon is part of larger power pools, the Western Interconnect and the Northwest Power Pool, its energy efficiency investments have broad affects. These affects cannot be directly tracked from the end-user implementing the measure, through the distribution system, into the transmission system, and back to the generator. They can, in aggregate, demonstrate impacts on energy systems locally, regionally, and more broadly. Oregon is a major investor in energy efficiency, both from utilities and the utilities' ratepayers. These investments affect the Northwest and western interconnect resource dispatch and system planning.

[9] *See* NORTHWEST POWER AND CONSERVATION COUNCIL, SIXTH PLAN MID-TERM ASSESSMENT 16 (2013), *available at* https://www.nwcouncil.org/media/6391355/2013-01.pdf

APPENDIX 7
Background on NEEA and market transformation

Oregon and the other Northwest states are heavily invested in energy efficiency measures resulting from market transformation and act in coordination through the Northwest Energy Efficiency Alliance (NEEA) to acquire those energy savings. Since its inception, NEEA has acquired over 1,000 average megawatts[10] of verified energy savings.[11] NEEA acquires verified energy savings in the marketplace through robust EM&V protocols.

Created in 1997, NEEA has been acquiring savings on behalf of its 130 plus funders.[12] Although NEEA coordinates its activities with its utility funders, NEEA market transformation savings are acquired through non-traditional market based programs as opposed to traditional, end-user, utility-driven energy efficiency programs. NEEA is the only market transformation entity in the country with fully established EM&V protocols, program development protocols, and methodologies for the unique practice of market transformation. It has been able to successfully demonstrate market impact and influence through programmatic efforts to change market practices and behaviors with resulting energy efficiency savings to the region's four state public utilities commissions, the Northwest's Regional Technical Forum,[13] and the U.S. Department of Energy (U.S. DOE), among others.

While market transformation may not be considered a traditional energy efficiency program methodology or practiced consistently across the nation, the Northwest has been a leader by investing and relying on market transformation energy efficiency programs for nearly 20 years.

For example, in 2010, NEEA began working with television manufacturers, distributors, and retailers to build, stock, and sell televisions that were capable of performing at an efficiency level beyond EPA's EnergyStar rating. The result had national impacts, changing the purchasing practices for national brands such as Walmart, Sears, and Best Buy. Similarly, and again with national effect, NEEA has been working with manufacturers on the continued advancement and development of highly efficient heat pump water heaters. The result was not only a change in the stocking practices at big box stores but a revision to the national energy efficiency standard for commercial and, soon to follow, residential hot water heaters.[14]

---

[10] An average megawatt is 8,760 MWh.

[11] NORTHWEST ENERGY EFFICIENCY ALLIANCE, BUSINESS PLAN 2015-2019 (2014), *available at* http://neea.org/docs/default-source/default-document-library/neea-2015-19-business-plan---board-approved.pdf?sfvrsn=2

[12] *Id.*

[13] In 1996, Congress directed the BPA and the NWPCC to convene a regional technical forum to develop standardized protocols for verifying and evaluating energy efficiency savings and to ensure that the region continues to meet NWPCC's targets for securing cost-effective energy efficiency. In April 1999, NWPCC voted to charter the Regional Technical Forum (RTF) as an advisory committee to NWPCC. *See, generally,* Regional Technical Forum, http://rtf.nwcouncil.org/

[14] NORTHWEST ENERGY EFFICIENCY ALLIANCE, NORTHWEST HEAT PUMP WATER HEATER MARKET TEST ASSESSMENT (2013) *available at* http://neea.org/docs/default-source/reports/northwest-heat-pump-water-heater-market-test-assessment.pdf?sfvrsn=6

Another example involves individual retail appliances. NEEA is able to track the sale of individual retail appliances in the Northwest with build specifications that were directly influenced by NEEA's programmatic efforts. Often, NEEA is able to track the sale of each appliance to a zip code or utility service territory. Thus, NEEA is able to attribute savings to a utility service territory or state for a consumer's purchase of a new television or water heater matching NEEA's efficiency specifications. NEEA's verification methodology for total regional savings for any measures undertaken by the organization are highly scrutinized and must pass through the measure adoption process laid out by the RTF.

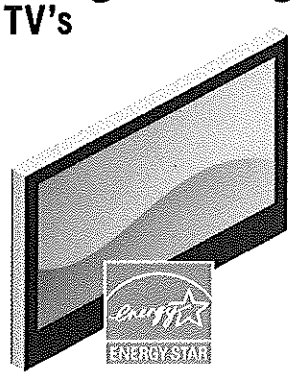
APPENDIX 7 (Continued)

Example: NEEA TVs Initiative Info-Graphic[15]

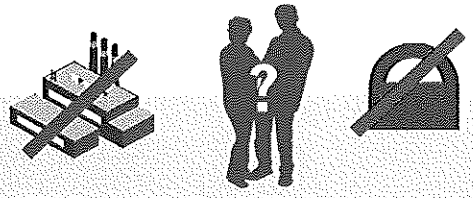
neea

Success Story: Televisions

Tuning into Energy-Efficient TV's



The average television in today's market is 55 percent more efficient than when the pilot program began in 2009.



Identify Barriers

NEEA identified three key market barriers:

- Lack of consumer awareness and value around energy-efficient TVs
- Manufacturers and retailers did not value energy efficiency due to lack of consumer demand
- Manufacturers resisted standards

Market Interventions

NEEA intervened to remove market barriers:

- Incentivized retailers to produce, promote, and sell most efficient televisions
- Drove series of increasingly stringent ENERGY STAR® specifications and influenced state standards and federal test procedures
- Coordinated consumer/retail awareness campaigns

Executive Summary

INITIATIVE:
Efficient Televisions

GOALS:

1) Accelerate adoption of energy efficient TVs through retailer incentives, sales associate training, regional marketing and point-of-sale product identification support.

2) Drive higher ENERGY STAR® specifications and encourage state and federal standards for energy-efficient televisions.

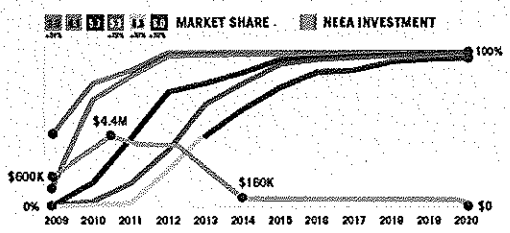
NEEA DIRECT INVESTMENT:
$15.9 million

Cumulative Savings Numbers

Total Regional Savings 2010-2014 = **138.7 aMW**
Net Market Effects 2010-2014 = **42.7 aMW**
Co-Created Savings 2010-2014 = **42.7 aMW**

Market Transformed

NEEA's work resulted in aggressive growth in market share of most efficient TVs. Today, nearly 90 percent of televisions sold meet the ENERGY STAR® 5.3 specification. Oregon and California adopted state standards and the ENERGY STAR® specification improves on a consistent schedule: the draft ENERGY STAR® 7.0 is 69 percent more efficient than ENERGY STAR® 4.0.



Northwest Energy Efficiency Alliance neea.org

[15] Northwest Energy Efficiency Alliance, http://neea.org/docs/default-source/previously-funded-initiatives/neea_pfi_tvs.pdf?sfvrsn=6

APPENDIX 8
Background on Oregon and the Northwest leadership in appliance standards

The Northwest has been collectively investing in programmatic and research initiatives since the 1980s that advance appliance standards in Oregon, Washington, Idaho, and Montana with national affect. BPA, NEEA, and NWPCC have been working regionally and nationally to advance the stringency and adoption rate of appliance standards. A recent study undertaken on behalf of BPA shows that in the 2014-2034 planning period, the Northwest will save 900 average MW because of 30 new federal appliance standards adopted by the US DOE.[16] Of these 30 new appliance standards, the Northwest has been active in 22 rulemakings.[17] NEEA, BPA, and staff from the NWPCC attend U.S. DOE rulemakings on a multitude of appliance standards. Yet, in many cases Oregon, the Northwest states, and California have gone further in appliance standards adoptions then the federal agencies.

Most recently, in 2013, the Oregon legislature adopted Senate Bill 692, which instituted appliance energy efficiency standards above that of the federal level for battery chargers, televisions, and high light output double-ended quartz halogen lamps.[18] Oregon, the Northwest, and California have adopted appliance standards well in advance of federal rulemaking or adoption. As a result when the U.S. DOE and EPA attempt to quantify savings from newly adopted appliance standards, they must re-adjust their saving baseline assumptions for California and the Northwest to account for this early action.[19] This will play out again as the Northwest has already adopted efficiency standards for bottle type water dispensers, commercial hot food holding cabinets, compact audio, DVD players, and recorders, while U.S. DOE has only just begun the rulemaking process.

The Northwest has invested millions of dollars over the years resulting in data used by U.S. DOE in their appliance standards rulemakings. For example, the Northwest can demonstrate that its efforts to influence the development, manufacture, and retail success of the horizontal axis energy efficiency clothes washer both predate and significantly influenced the adoption of a federal standard and EPA EnergyStar labeling. Data was acquired through research and testing funded by Northwest entities to verify the effectiveness of these new units, energy, water and detergent saving, and finally consumer acceptance of these units. This data was given to U.S. DOE during its clothes washer rulemaking. For these programmatic efforts, for every unit sold prior to the adoption of the federal appliance standard, the Northwest and Oregon should be allowed under 111(d) to count these appliance standards efforts as energy efficiency savings, where verifiable through accepted EM&V practices and reporting.

---

[16] *See* Tom Eckman, NORTHWEST POWER AND CONSERVATION COUNCIL, OVERVIEW OF FEDERAL APPLIANCE STANDARDS AND THEIR IMPACT ON REGIONAL LOADS PRESENTATION (2014), *available at* http://www.bpa.gov/EE/NewsEvents/presentations/Documents/FedStdsImpact_BPABrownBag_090414.pptx

[17] *See* Appendix 9 for a list of active appliance standards rulemaking where Oregon and Northwest states have been involved.

[18] S.B. 692, 77th Leg. Assem., Reg. Sess. (Or. 2013), *available at* https://olis.leg.state.or.us/liz/2013R1/Measures/Overview/SB692

[19] *See* Institute for Electric Efficiency, Integrating Codes and Standards into Electric Utility Energy Efficiency Portfolios (2001) *available at* http://www.edisonfoundation.net/iei/Documents/IEE_IntegratingCSintoEEPortfolios_final.pdf

APPENDIX 9
Appliance standards rule making activity[20]

Oregon, as represented through NWPCC staff and staff from the NEEA, has been active in a majority of the US DOE's appliance standards rulemakings. The group of stakeholders, which includes Oregon, works with U.S. DOE to conduct studies to supply data.

Covered Product	Standard Effective Year	Northwest Role
General Service Fluorescent Lamps	2012	Significant. This was a controversial rulemaking and required significant collaboration and data.
Incandescent Reflector Lamps	2012	Significant. Same as GSFLs above.
Commercial Clothes Washers	2013	Limited. Provided comments.
Dishwashers	2013	Representative from the Northwest Power Planning and Conservation Council negotiated an agreement on the rulemaking and standards with manufacturers.
Refrigerators and Freezers	2014	Representative from the Northwest Power Planning and Conservation Council negotiated an agreement on the rulemaking and standards with manufacturers.
Room Air Conditioners	2014	Representative from the Northwest Power Planning and Conservation Council negotiated an agreement on the rulemaking and standards with manufacturers.
Fluorescent Lamp Ballasts	2014	Significant. DOE's original proposal for test procedure and metrics was way off base. We worked with mfrs to get a better result.
Water Heaters	2015	NEEA, Provided signficant input on test procedures and the construct of the final rule. NEEA provided data and study results.
Small Electric Motors	2015	Participated. Provided comments. NEEA provided data and study results
Central Air Conditioners and Heat Pumps	2015	Significant. DOE's original proposal for test procedure was way off, did not include standby use properly. We provided significant data and comment based on PNW field experience.
Clothes Dryers	2015	Representative from the Northwest Power Planning and Conservation Council negotiated an agreement on the rulemaking and standards with manufacturers.
Clothes Washers	2015	Representative from the Northwest Power Planning and Conservation Council negotiated an agreement on the rulemaking and standards with manufacturers.
Microwave Ovens	2016	Limited. Rulemaking concerned standby energy use only. Provided comments.
Distribution Transformers: Liquid-Immersed	2016	Significant. Part of negotiated rule. NEEA provided some of the only data in the negotiation.
Distribution Transformers: Low-Voltage Dry-Type	2016	Significant. NEEA provided some of the only data in the negotiation.
Distribution Transformers: Medium-Voltage Dry-Type	2016	Significant. NEEA provided some of the only data in the negotiation.
External Power Supplies	2016	Participated. Ecova was the technical lead. NEEA provided strong comments and support for the advocates' technical and market comments.
Electric Motors	2016	Significant. Strong advocacy while being able to work with manufacturers and their engineers.
Commercial Refrigeration Equipment	2017	Significant. Negotiated with other efficiency advocates with NEMA and the manufacturers. Very significant savings here from coverging large numbers of products not yet covered by standards.
Walk-In Coolers & Freezers	2017	Significant. Assisted with reformation of DOE's original proposal for test procedures and efficiency metrics. Worked with manufactures to develop a much more rational proposal that will be much easier to enforce.
Metal Hallde Lamp Fixtures	2017	Significant. NEEA provided some of the only real technical expertise on the advocates' side.
Furnace Fans	2019	Significant. Assisted with reformation of DOE's original proposal for test procedures and metrics. Worked with manufacturers to develop a more workable proposal, based on existing test procedures, and provided field data and lots of technical comments.

[20] Oregon state agency staff generated summary table.

APPENDIX 10
Background on building codes and building code adoption and compliance

By crediting states for verifiable advanced enforcement adoption of the most recent International Energy Conservation Code (IECC), EPA would induce states to update and enforce their building code, resulting in the most cost effective energy savings of all energy efficiency measures.[21]

Energy efficiency building codes are not adopted by each state at the same rate. The IECC is a building code created by the International Code Council. The IECC adoption is not federally mandated. The most recent code was created in 2012; however, not every state has adopted this most recent building code. In fact only 35 states have adopted an energy conservation building code. Still other states such as Washington, Oregon, and California have adopted energy conservation building codes that exceed the stringency of the IECC. Therefore, Oregon recommends that EPA give energy efficiency credit to those states for their enforcement of the most recent IECC standard, and that EPA allow those states that have adopted more a stringent building code to count the incremental savings as part of their energy efficiency savings in a state compliance plan. This will have the additional benefit of encouraging states to adopt the new building code and possibly encourage some states to reach further. As EPA is aware, building codes are one of the most cost effective energy efficiency measures a state can undertake.

The Northwest plans and builds energy efficiency measures with the end goal of building code adoption. These energy efficiency measures are programmatic, created to influence building code reform and as such have been subject to strict EM&V standards. Northwest ENERGY STAR Homes is a voluntary program created to build the market's capacity to apply more energy efficient construction techniques. Through this program Oregon and the other Northwest states can demonstrate market readiness for an upgraded code, while addressing home builders cost concerns. Once the code is adopted, NEEA provides ongoing training and support to help ensure compliance. When the EPA launched the national ENERGY STAR Homes program, residential building codes in Oregon and Washington already exceeded the standards for national certification. While successful in other parts of the country, the national program for ENERGY STAR homes was not a good fit for the Northwest. NEEA, with support from its utility partners, led negotiations with the EPA in 2003 to establish the Northwest ENERGY STAR Homes specification, which requires ENERGY STAR homes built in the region to exceed state building codes for energy efficiency by at least 15 percent. In 2009, at the request of Governor Kulongoski, the Oregon state senate passed a bill to reduce building energy consumption by 15 percent. The Oregon Department of Energy prepared a residential code change proposal that was based directly on the successful Northwest ENERGY STAR Home specification.

Oregon and the Northwest fund NEEA to conduct building code training to support compliance with commercial and residential codes. A key step in evaluating the potential savings from enhancing compliance with energy codes is the assessment of baseline compliance rates.[22] In

---

[21] *See* NORTHWEST ENERGY EFFICIENCY ALLIANCE, OREGON RESIDENTIAL ENERGY CODE COMPLIANCE (2014), *available at* http://neea.org/docs/default-source/reports/oregon-residential-energy-code-compliance.pdf?sfvrsn=4

[22] SARAH STELLBERG, INSTITUTE FOR MARKET TRANSFORMATION ASSESSMENT OF ENERGY EFFICIENCY ACHIEVABLE FROM IMPROVED COMPLIANCE WITH U.S. BUILDING ENERGY CODES: 2013 – 2030, (February 2013)

2013, NEEA completed a residential code compliance study in Idaho with findings of 90 percent compliance (one of the highest compliance rates in the country) and conducted this same type of study in Montana and Washington.[23] NEEA also conducted an Oregon Residential Energy Code Compliance study, which describes the compliance of residential new construction in the state of Oregon with the revised state residential code: Chapter 11 of the 2011 Oregon Residential Specialty Code (ORSC). Compliance rates in Oregon were found to be 96 percent.[24] The results of these code studies help Oregon, the Northwest, and NEEA create more accurate savings forecasts for new construction and to target training and education efforts more effectively.

Oregon and the Northwest invest in code adoption and compliance as an energy efficiency saving opportunity because the Northwest has found that such investments do increase compliance and thus result in greater savings. For example, when New York conducted a code compliance study in 2010 they found compliance rates 67 percent overall and the percentage of EPA ENERGY STAR homes in New York was only 23 percent. Current published studies show Illinois has an 87 percent compliance rate for residential new construction. When U.S. DOE conducted a code compliance study in 2013, it found that individual state code compliance was between 20 and 100 percent. Therefore, Oregon argues that investment in code compliance does produce incremental savings that would not have materialized through simple code adoption.

---

available at
http://www.imt.org/uploads/resources/files/IMT_Report_Code_Compliance_Savings_Potential_FINAL_2013-5-2.pdf

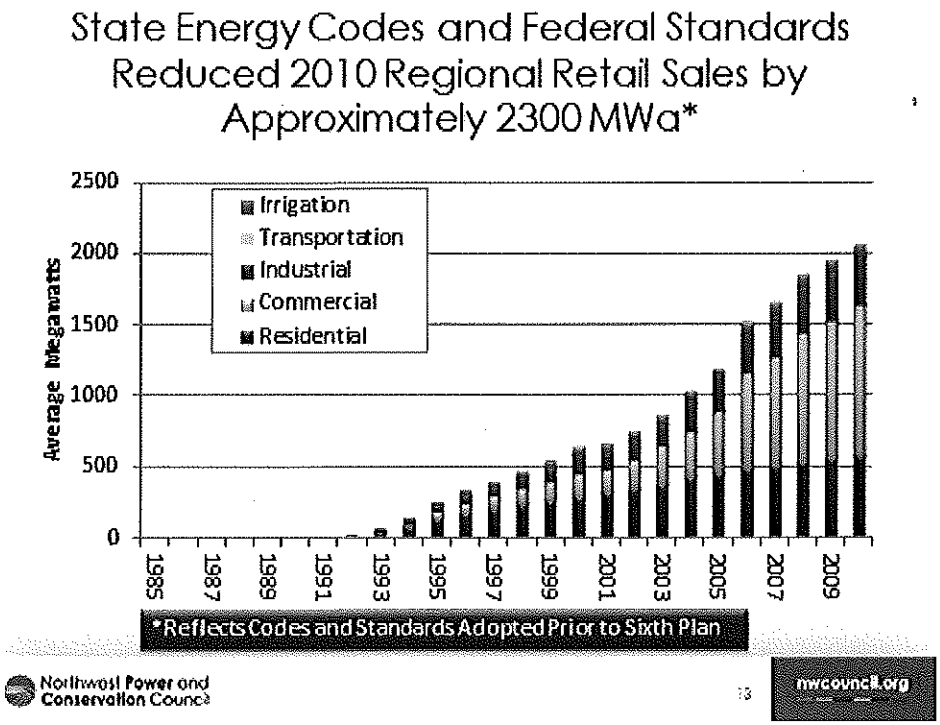
[23] NORTHWEST ENERGY EFFICIENCY ALLIANCE, IDAHO RESIDENTIAL ENERGY CODE COMPLIANCE (2013), *available at* http://neea.org/docs/default-source/reports/idaho-residential-code-compliance.pdf?sfvrsn=4

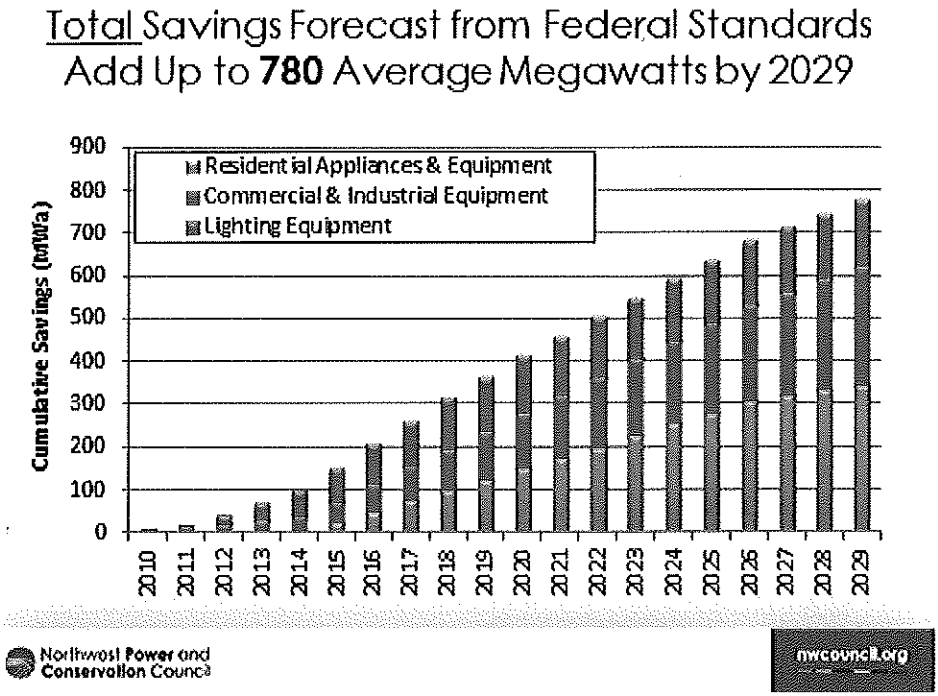
[24] *See* NORTHWEST ENERGY EFFICIENCY ALLIANCE, *supra* note 22.

APPENDIX 11

Northwest accounting of building code and appliance standards savings

In the Northwest, states count Federal Appliance Standard savings in conservation supply curves. This helps the Northwest better understand what resources are needed to meet load. The purchases of efficient appliances are tracked through programmatic measures to induce market adoption. Additionally, savings from building codes are counted when planning to meet load in Oregon. Oregon, the Northwest, and California work to advance building code development, adoption, and compliance. Methodologies have been developed to quantify the savings from these measures in the Northwest. The graphs below reflect how NWPCC incorporates building code and appliance standard savings in the supply curve.




Total Savings Forecast from Federal Standards
Add Up to 780 Average Megawatts by 2029
Residential Appliances & Equipment
Commercial & Industrial Equipment
Lighting Equipment
Cumulative Savings (tnWa)
900
800
700
600
500
400
300
200
100
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
Northwest Power and Conservation Council
nwcouncil.org

APPENDIX 12
Background information regarding demand response measures

Oregon believes that demand response is a wholly separate demand side resource with unique capabilities. While demand response is traditionally dispatched during peak load hours to control market peak power costs, this resource may also be used to assist power system operators with power system reliability, stabilization, and to address power delivery from variable energy resources. The numerous potential uses for demand response affects its emissions reduction potential. Therefore, Oregon offers the following on how EPA should count the emission reductions resulting from the use of demand response.

Oregon first suggests EPA leverage the work developed in other states to quantify the energy savings potential and system impacts of demand response. In particular, Oregon suggests outreach to the California Public Utility Commission, who in 2008 developed load impact and cost effectiveness methodologies for demand response. California's demand response cost effectiveness methodologies should help EPA develop a methodology that can be used by other states in determining how best to find cost effective demand side emissions reduction opportunities. This will be particularly helpful for states that do not have the benefit of a wholesale market operator.

Oregon encourages EPA to work with the National Institute of Standards and Technology, (NIST), which has helped to categorize the many different types and operational characteristics of demand response. Additionally, each of the independent system operators have worked for a number of years quantifying the operational and market benefits of demand response. The Federal Energy Regulatory Commission has also worked for a number of years to support demand response inclusion in electric wholesale markets. EPA should work with these entities.

Second, Oregon suggests that EPA require those states that submit plans, which include demand response as an emissions reduction measure, to submit system modeling information that quantifies the emissions reduction potential of demand response. Because demand response is dispatched based on temporal market conditions, and is, therefore, a contingent resource, the state would true-up emissions savings each year from demand response with EPA.

Lastly, Oregon suggests that demand response be specifically addressed in the final Clean Power Plan and thus encouraged because of its ability to balance variable energy resources without dispatch of fast ramping fossil fuel resources. Although this type of demand response may offset resources not subject to regulation under the Proposal it does have significant system emissions reduction potential. Where the state can demonstrate that the use of demand response, as a balancing resource, did offset fossil fuel generation within the power pool serving the state, credit should be given at the appropriate marginal emission rate for the region or power pool emissions rate. Where demand response shifts but does not reduce load the difference in the marginal emissions rates should be used.

APPENDIX 13
Background on evaluation, measurement, and verification (EM&V)

Oregon and the Northwest have a well-documented history of developing EM&V protocols and coordinating program development among the four states. This work provides an excellent example for EPA of the work that can be accomplished when EM&V and program administration is standardized and harmonized. [25] Oregon encourages EPA to open a discussion with the RTF, Oregon, Idaho, Montana, and Washington to learn more about how this system has been structured. It relies on common best practices and common program administration protocols, while allowing for enough flexibility for program administrators to meet unique service territory challenges.[26]

In 1996, Congress directed BPA and NWPCC to convene a regional technical forum to develop standardized protocols for verifying and evaluating energy efficiency savings and to ensure that the region continues to meet NWPCC's targets for securing cost-effective energy efficiency. In April 1999, NWPCC voted to charter the RTF as an advisory committee to NWPCC.

For states and regions, such as the Northwest, California, or the RGGI states, where energy efficiency practices are more mature, EPA should be careful not to create barriers to advanced measure development or barriers to piloting novel measure development through overly prescriptive EM&V and reporting requirements. Those states that have demonstrated EM&V maturity should initially be granted energy savings and emission reductions credit for current and proposed measures that are part of a state compliance plan. The state would demonstrate robustness of proposed and operating EM&V in its state compliance plan. Changes to energy efficiency measure type, implementation, or development done after the EPA has approved a state plan should be accounted for and allowed by EPA, again with a state demonstration of acceptable EM&V rigor and efficacy.

However, for states that have not demonstrated energy efficiency EM&V maturity, EPA should create a forum offering technical assistance to those states in the development of their state compliance plans, when such plans call for investment and implementation of energy efficiency measures.

---

[25] To review EM&V protocol development requirements, *see* THE REGIONAL TECHNICAL FORUM, ROADMAP FOR THE ASSESSMENT OF ENERGY EFFICIENCY MEASURES (June 2014), *available at* http://rtf.nwcouncil.org/subcommittees/Guidelines/RTF%20Guidelines%20(revised%206-17-2014).pdf

[26] For a list of the deemed savings, standards protocols, and supporting files in the Northwest *see, generally,* The Regional Technical Forum, RTF Unit Energy Savings (UES) Measures: http://rtf.nwcouncil.org/measures/Default.asp