Northwest Power And Conservation Council Statement Of Basis And Purpose For The Seventh Power Plan And Response To Comments On The Draft Seventh Power Plan

May 2016

The Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) directs the Northwest Power and Conservation Council (Council) to develop a "regional conservation and electric power plan" and to review the plan not less than every five years. The Council adopted the Sixth Power Plan in February 2010. The Council began a review of the Sixth Plan and development of the Seventh Power Plan in spring 2013. After nearly 3 years of extensive analysis and discussion of the challenges of maintaining a low-cost and reliable regional power system in light of the uncertainties facing the system over the next 20 years, the Council adopted the Seventh Power Plan in February 2016.

This document serves as the "statement of basis and purpose" described in Section 553 of the federal Administrative Procedures Act to accompany agency decisions on final rules. This document also describes how the Council considered and responded to the comments received during the development of the Seventh Power Plan including describing the changes and continuities from the draft to final plan.

Statutory Framework – The Northwest Power Act and Development of the Seventh Power Plan

The Northwest Power Act directs the Council to develop a power plan that gives priority to resources the Council determines to be cost-effective in the following order: first, to conservation; second to renewable resources; third, to generating resources using waste heat or generating resources of high fuel-conversion efficiency; and fourth, to all other resources. The plan must also set forth a general scheme for implementing conservation measures and developing generating resources under Section 6 of the Act in order to reduce or meet Bonneville's obligations. The Council is to set forth this scheme with due consideration by the Council for (A) environmental quality; (B) compatibility with the existing regional power system; (C) protection, mitigation, and enhancement of

fish and wildlife and related spawning grounds and habitat, including sufficient quality and quantity of flows for successful migration, survival, and propagation of anadromous fish; and (D) other criteria that may be set forth in the plan.

The Power Act then requires the plan to include the following elements:

- An energy conservation program, including model conservation standards
- Recommendation for research and development
- A methodology for determining quantifiable environmental costs and benefits
- An electricity demand forecast of at least 20 years
- A forecast of power resources estimated by the Council to meet the obligations of the Bonneville Power Administration and the amounts that can be met by resources in each of the priority categories
- The power resource forecast shall (i) include regional reliability and reserve requirements; (ii) take into account the effect, if any, of the requirements of the fish and wildlife program on the availability of resources to Bonneville; and (iii) include the approximate amounts of power the Council recommends Bonneville acquire on a long-term basis and may include, to the extent practicable, an estimate of the types of resources to be acquired
- An analysis of electricity reserve and reliability requirements and cost-effective methods of providing reserves designed to insure adequate electric power at the lowest probable cost
- The fish and wildlife program promulgated earlier by the Council under Section 4(h) of the Act to protect, mitigate, and enhance fish and wildlife and related spawning grounds and habitat affected by the development and operation of any hydroelectric project on the Columbia River and its tributaries.

One of the fundamental purposes of the Northwest Power Act was to provide for the participation of the four Northwest states, their local governments, consumers, the Bonneville Power Administration's customers, the users of the Columbia River system including Indian tribes and fish and wildlife agencies, and the public at large in the development of regional power policies. The Power Act directs the Council and Bonneville to consult with Bonneville's customers and include the comments of those customers in the record of the Council's proceedings. The Council and Bonneville also are to recognize and not abridge the authorities of State and local governments, electric utility systems, and other non-Federal entities responsible to the people of the Pacific Northwest for the planning, conservation, supply, distribution, and use of electric power and the operation of electric generating facilities. Specifically relevant to the power plan, the Power Act requires the Council and Bonneville to encourage the cooperation, participation, and assistance of appropriate Federal agencies, State entities, State political subdivision, and Indian tribes. The Council is also required before adopting a plan, to hold public hearings on the proposed plan in each state represented by members of the Council. The Council fulfilled each of these obligations in the development of the Seventh Power Plan.

Developing the Seventh Power Plan

Development of the Seventh Power Plan began with the adoption of the Sixth Power Plan Mid-Term Assessment in March 2013. The Mid-Term Assessment evaluated the region's progress in implementing the Sixth Power Plan and discussed changes to the region's power system and in the energy industry that required further consideration in the Seventh Power Plan.

Around the same time as the adoption of the Sixth Plan Mid-Term Assessment Report, the Council organized a series of symposiums on key energy issues likely to play a role in the development of the Seventh Power Plan. Issues explored at the symposiums included "Innovations in Energy Storage Technology" (February 2013); "Greenhouse Gas and the Regional Power System" (June 2013); the "Pacific Northwest Market" (July 2013); and the "California Power Market" (Sept 2013). The symposiums, open to the public and available live via the internet and telephone, featured panel discussions by industry experts from within and outside the region. For example, the February 2013 symposium featured a panel discussing energy storage technologies used to integrate renewable resources. The June 2013 symposium featured a primer on carbon dioxide emissions as well as presentations on the status of greenhouse gas emissions by the regional power system and potential impacts of planned coal retirements in the Northwest. The June symposium also featured a presentation by an economist at the Environmental Protection Agency on federal estimates of the Social Cost of Carbon and presentations from state agencies and regional utilities on the valuation of GHG emissions in regulation and in utility integrated resource plans. The June symposium also included presentations and discussion on the effects of climate change on Columbia River Basin water supplies and on northwest hydro system operations. The July and September 2013 symposiums brought together experts to discuss regional and California power market conditions, development of renewable and natural gas-fired generating projects, and electricity trade between California and the Northwest. The September 2013 symposium also hosted panel discussions on California's experiences with the Greenhouse Gas Cap and Trade Program, California's 33 percent RPS, utility-scale and distributed solar development in California, as well as the effect of San Onofre Nuclear Generating Station and once-through cooling plant retirements on reliability planning—and the implications of all of these on electricity trade between California and the Pacific Northwest.

The development of the plan took shape primarily over the course of the Council's regular monthly meetings and, as the plan progressed, at special meetings and webinars devoted to discussing the plan and providing guidance to Council staff. The Council provided advance notice on its website of all meetings, symposiums and advisory committee meetings related to the development of the plan. In addition, the Council hosted a web page "About the Seventh Power Plan" on which all technical and analytical materials used to develop the plan, Power Committee and Council presentations related to the development of the Seventh Plan and background information on developing a regional power plan were made available for the duration of the planning process.

In addition to its monthly meetings, the Council utilized its advisory committees to get feedback on technical and policy issues relevant to the power plan effort. The Council's advisory committees, established to advise the Council on subjects such as conservation resources, generating resources, demand forecasting, resource adequacy, natural gas, and resource strategies, collectively have over 250 members representing a wide range of public and industry interests and

expertise. In addition to advisory committee members, there are numerous individuals and organizations that follow or participate in advisory committee discussions all of which are open to the public. For the Seventh Power Plan, advisory committees were asked to provide input to the Council on such topics as: what issues are important to examine in the regional plan; what the plan should assume about the adoption of emerging technologies such as solid-state lighting and solar photovoltaics; what cost reductions and performance improvements should be assumed for new wind and solar photovoltaics generating resources and what assumptions about the upper and lower bounds of natural gas prices from 2016-2025 should be used as input into the model.

Throughout 2014 and 2015, the Council focused monthly at its Power Committee and Council meetings on fundamental changes to the energy industry since the Sixth Power Plan, challenges facing regional utilities, new generation technologies and other developments with the potential to affect the region's power system over the next 20 years. Such topics, addressed through staff technical briefings and presentations by industry professionals from throughout the West as well as representatives from the utilities and co-operatives throughout the region included the following:

- renewable resource integration
- power system capacity, balancing and flexibility
- assessing regional resource adequacy
- locational value of new generation in system planning
- trends in regional energy and peak electricity loads
- efforts to form a regional energy imbalance market
- regional and west-wide transmission activities
- approaches to reducing the region's carbon footprint
- Clean Power Plan regulations and other new, evolving and proposed environmental regulations affecting the production of electricity from fossil-fueled power plants

Throughout 2014 and 2015, the Council also discussed the nuts and bolts of developing a regional power plan and resource strategy consistent with the Power Act—and the specific assumptions and inputs to be used in the Regional Portfolio Model (RPM). For example, in October 2014, the Council held a public webinar on the Council's process for developing its regional energy plan. During the webinar, the Council's Power Division Director described the major components of the power plan, the methods the Council will use to develop and vet data and assumptions used in developing the plan, and the major analytical models the Council would employ. At subsequent meetings, the Council dove into the development of each element of the regional plan as required by the Act. For example, as part of developing an electricity demand forecast of at least 20 years, the Council discussed key regional demographic and economic drivers of electric power demand such as fuel prices, population growth, manufacturing and industrial output, trends in commercial real estate, and the impact of a growing number of electric vehicles, legal cannabis operations and large data centers operating in the Pacific Northwest. Similarly, as part of developing a forecast of power resources estimated by the Council to meet the obligations of the BPA Administrator and the amount that can be met by conservation, renewable and other resources, the Council examined the outlook for regional hydropower and the system's ability to meet peak capacity and energy needs. The Council also spent considerable time discussing the numerous inputs to the RPM such as what financial assumptions for resource development to use as well as the demand response and conservation supply curves to be input into the RPM. The Council's Power Committee throughout 2014 and into 2015 also examined the characteristics of various generating resources including--

natural gas combined cycle combustion turbines, natural gas peaking turbines and reciprocating engines, onshore utility-scale wind, utility-scale solar PV, energy efficiency resources, demand response resources and generating and demand-side resources not yet commercially viable but which have potential to be in the next 20 years. During the development of the draft, the Council also released an issue paper for public comment seeking feedback on proposed high level metrics for measuring power plan progress and another issue paper seeking feedback on whether it is better to use natural gas or electricity to power water heaters and furnaces in terms of energy efficiency.

One of the required elements of the power plan, a methodology for determining quantifiable environmental costs and benefits of *new* resources to use in estimating and comparing the direct costs of new resources, was the subject of several Council meeting and Power Committee discussions in 2014 and 2015. Discussion of the methodology began at the April 2014 Council meeting with an examination of the approach the Council used in past plans to internalize environmental externalities associated with the development of new resources. In September 2014, the Council released for public comment a draft issue paper on a proposed methodology for use in the Seventh Power Plan. The idea was to get feedback from regional stakeholders before the Council had to approve a methodology and use it in developing the draft plan as well as including the methodology itself in the draft plan as required by the Power Act. The Council also asked its Generation Resources Advisory Committee and Resource Strategy Advisory Committee to review the issue paper and provide feedback. The feedback from the advisory committees and the comments received during the comment period were reviewed by the Council and discussed at the October and November 2014 Council meetings. The Council then gave staff the green light to use the proposed quantification methodology in estimating the cost of new resources for the Seventh Plan's resource strategy. As for existing resources, the Council also approved use of an approach for considering environmental costs of existing resources and an approach for considering other matters of environmental quality outside of costs. The Council discussed again in April 2015 how the costs of compliance with environmental regulations would be estimated for existing power resources consistent with the approach previously agreed on. Also in April 2015, Council staff released a technical support document identifying regulatory compliance costs impacting existing northwest generating plants. Comments received on the document, including updated cost values for some of the assumptions, were used in developing the draft Seventh Power Plan.

A major undertaking by the Council in preparation for developing the Seventh Power Plan involved redeveloping the Council's Regional Portfolio Model (RPM) which is the primary analytical tool used for strategic risk analyses of resource strategies. The original RPM was created by Council staff over a decade ago and was used by the Council in developing the Fifth and Sixth Power Plans. The redevelopment was needed to bring the model up to date with current software technologies and standards, to add new capabilities to the model to make it more robust and capable of capturing more dynamic interactions of the region's power system, and to make it more user-friendly for Council staff and interested third-parties. The redevelopment work began in fall of 2013 and was successfully completed and the model vetted in time for use in developing the Seventh Power Plan. Reports of the redevelopment progress as well as the model's capabilities and functionalities were discussed and vetted publicly at Power Committee and Council meetings as well as through the Council's System Analysis Advisory Committee, Generating Resource Advisory Committee and Resource Strategies Advisory Committee.

On October 14, 2015, the Council voted to release the draft plan for a 60-day public comment period. The Council also held public hearings on the draft plan in Kalispell, Missoula, Spokane, Pasco, Seattle, Boise, Portland and Eugene during November and December 2015. The Council received roughly 508 written comments through the end of the comment period and 141 oral comments at the public hearings. Comments came from concerned citizens, utilities, environmental groups, renewable resource advocates, public interest organizations, resource developers, industry consultants, regulators, the Bonneville Power Administration, local policymakers and others. All written comments and transcripts of the public hearings were circulated to Council members and relevant staff. The comments were also summarized and discussed at the Council meetings starting in November 2015 and continuing through the development of the final plan. In addition, throughout the development of the plan the Council met with state energy offices, regulators, utility and industrial customers of Bonneville, ratepayer and environmental groups, renewable resource advocates, energy services providers, and the Bonneville Power Administration to discuss the draft plan and issues of concern. Consultations included Council member meetings with regional policymakers and other members of the public, as well as staff-to-staff meetings between the Council and other organizations.

Whether prompted by comments, internal staff review or both, changes to RPM input assumptions, which were frozen in late spring 2015 in order to have available for use in developing the draft plan were discussed by the Council starting in November 2015, during the public comment period. Certain RPM input assumptions were revised as a result in order to reflect updated data and the continuing effort to review and refine resource characteristics data and analysis. For example, RPM resource data was updated to reflect total regional balancing and flexibility reserves during the comment period. After the close of public comment, careful consideration of all the comments, prompted yet other revisions to model inputs, analysis, and the draft plan narrative.

The Council made its decision to adopt the Seventh Power Plan after carefully considering all of the information developed for the plan, including extensive staff analyses and the views expressed in the comments and consultations including those generated by public review of the draft plan. The Council then unanimously voted to adopt the final Seventh Power Plan including a set of supporting technical appendices at the Council's regularly scheduled public meeting in February 2016. The Council also approved the inclusion in the final plan of this response to comments and general explanatory statement.

Summary of Key Issues and Conclusions of the Seventh Power Plan

The Seventh Power Plan provides guidance for Bonneville and the region's utilities on new resources that will supply the region's electricity needs while minimizing the economic risk associated with uncertain economic and regulatory conditions over the next 20 years. The plan's effectiveness does not rely on one particular future or set of economic conditions being realized nor does the plan assume that the region or the industry will remain static. Rather, the Seventh Power Plan is an approach to power planning that accounts for future uncertainty. The result is a regional

strategy that prioritizes conservation and can assure the Pacific Northwest of an adequate, efficient, economical, and reliable power supply over the next 20 years under many different future conditions.

The plan's resource strategy finds:

- Conservation is by far the least-expensive resource available to the region. It avoids risks of volatile fuel prices and financial and regulatory risk associated with developing new generating resources. Conservation resources are carbon-free and contribute significantly to the region's energy savings and capacity needs by reducing winter and summer peak demands. The region should aggressively develop conservation with a goal of acquiring 1,400 aMW by 2021, 3000 aMW by 2026 and 4,300 aMW by 2035.
- The region should develop significant demand response resources by 2021 to meet the need for additional peaking capacity. In order to meet regional resource adequacy standards, the region should develop at least 600 MW of demand response resources.
- The region needs additional capacity resources to meet winter peak demand.
- There is a low probability that the region will need to develop new natural gas resources in the next 5-10 years unless the plan's conservation and demand response resources are not developed or coal-fired generation, beyond those plants already scheduled, is retired.
- The region should work towards better utilization of existing resources to delay the need for additional resources and to give time for emerging technologies an opportunity to develop.
- The region should continue to develop renewable resources sufficient to meet state renewable portfolio standards (RPS).

One of the key findings from the Council's analysis is that from a regional perspective, compliance with the U.S. Environmental Protection Agency's carbon emissions rule should be achievable without adoption of additional carbon reduction policies in the region. This is not to say that no additional action is required. Without any additional carbon control policies, carbon dioxide emissions from the Northwest power system are forecast to decrease from about 54 million metric tons in 2015 to around 36 million metric tons in 2035. This reduction is driven by: 1) the anticipated retirement of three coal-fired power plants (Centralia, Boardman, and North Valmy) by 2026 whose retirements have already been announced (note that the retirement date of North Valmy has not been set); 2) increased use of existing natural gas-fired generation to replace these retiring resources; and 3) developing roughly 4,300 average megawatts of energy efficiency by 2035, which is sufficient to meet all forecast load growth over that time frame under most future conditions. If these actions do occur, then the region will have a very high probability (98 percent) of complying with the EPA's carbon emissions limits, even under critical water conditions.

RESPONSE TO COMMENTS ON THE DRAFT SEVENTH POWER PLAN

The majority of the comments the Council received were supportive of the Draft Plan overall; while also expressing concern about particular aspects of the analysis, the conclusions drawn from the analysis or the narrative. There was overall support for the strategy outlined in the draft that called for energy efficiency as the primary resource to meet the region's electricity needs over the next twenty years. Beyond that, there was less agreement amongst the commenters as to the role that demand response, renewable resources and natural gas generation should play in the Seventh Power Plan's resource strategy.

Each comment was carefully reviewed and considered during the course of developing the final power plan. Comments seeking clarification, correcting technical or analytical errors, and providing updated reliable data were numerous; and, while not all summarized below, served to vet the analytics in the draft and were largely accepted resulting in a number of updates and corrections to the analysis considered in the final plan. Multiple comments also pointed out inaccuracies, inconsistencies and gaps in the draft's narrative. The Council addressed these comments through corresponding minor revisions in plan language and did not otherwise discuss them here.

Comments questioning the technical assumptions or inputs that went into the draft and which prompted fairly significant changes in the technical analysis; comments prompting further discussion and/or necessitating additional guidance from Council members; and comments on technical or policy issues that generated a lot of comments–those are largely captured in the summary below. The comments, paraphrased and summarized, are loosely organized by topic.

Renewable Generation Comments

The Council received many comments calling for an increase in the amount of renewable resources developed. A significant number of commenters questioned the technical inputs, modeling assumptions and analysis supporting the Draft Plan's recommendation to satisfy but not exceed existing renewable portfolio standards. Specifically, the comments claimed the Council had undervalued renewable resources in the RPM and that had the inputs and analysis been correct, renewable resources would have shown up in the analysis as much more cost-effective as compared to other resources, especially natural gas resources. Northwest Energy Coalition, Climate Solutions, Sierra Club, Renewable Northwest, Washington Environmental Council, Washington Utilities & Transportation Commission, Snake River Alliance, other organizations and multiple individuals commented that the Council's modeling of renewable resources is flawed because: 1) the RPM does not credit renewable resources with having capacity value, just energy value; and 2) the Council's modeling approach does not recognize the ability of renewable resources and associated

measures to contribute significantly to meeting winter and summer peak needs. PGE commented that just to meet Oregon's renewable portfolio standard, there will need to be more renewable energy resources developed in the near-term given the closure of the Boardman Coal Plant. In contrast, many other utilities and utility organizations supported the Draft Plan's findings that the region's power system needs additional capacity resources to meet peak demand and that the shortfall is difficult to make up with renewable resources such as wind and solar which contribute less to the capacity needs of the region than other resources such as natural gas.

Response: The Council's responsibility to ensure an adequate and reliable power system requires looking at both the energy and capacity value of the system's resources, and determining what if any new resources to bring on based on the region's need for energy, capacity or reserves. The Council agreed with the comments that the RPM should compare, on a level playing-field, contributions of new resources towards meeting the region's peak electricity needs.

As the Draft Plan was being developed, the RPM initially only evaluated adequacy based on the need for winter capacity. Additionally, the winter capacity contributions of new resources, including the effects of system storage, were only modeled for energy efficiency and gas turbine resources. As a result of the feedback received during the development of the draft, the Council used its GENESYS model to establish quarterly adequacy reserve requirements and to determine the quarterly contribution to hourly peak capacity needs from renewable resources (wind, solar PV and geothermal) as well as energy efficiency and gas turbines. To ensure the capacity contributions of renewable resources such as wind and solar were recognized by the model, the Council, with advice from the Council's System Analysis Advisory Committee, revised its approach to modeling resources in two significant ways. First, it revised the approach it took to looking at system adequacy from a single quarter (winter) using a single adequacy reserve margin (ARM) to looking at system adequacy for each quarter of the year and using a quarterly reserve margins. Second, using the quarterly ARMs, the Council then derived quarterly associated system capacity contributions or ASCCs for all new generating resources including solar PV and wind. The ASCC reflects the fact that energy produced by generating resources or energy saved by energy efficiency resources can be used to store water in the hydro system for later use to meet peak demands. Moving to quarterly ARMs for energy and capacity and quarterly ASCCs for combined cycle combustion turbines, energy efficiency and wind and solar PV resources enabled the RPM to capture the seasonal variation in generation output of renewable resources that was absent in the draft estimates, and improved the plan's analysis of the potential need for and the types of resources that can satisfy both winter and summer peaking capacity. The plan's overall finding that energy efficiency, demand response, and possibly natural gas after 2021 are the least-cost ways to meet the region's electricity needs however, did not change as a result of the revised analysis.

Utilities and utility organizations largely supported the Draft Plan's finding that building renewable resources beyond the amount required to satisfy state renewable portfolio standards was not the most cost-effective way to reduce the region's carbon emissions over the next 20 years. Comments asked the Council to highlight this point in the final plan for policymakers and regulators to review.

Response: The comments and the resulting changes in the input assumptions and modeling of renewable resources between draft and final sharpened the analysis, but did not significantly alter the outcome of the portfolio analysis over the 20-year horizon in terms of favoring the development of renewables beyond the development already proscribed by state renewable portfolio standards. This is in large part because the region, in most futures tested, has surplus energy but is short on peaking capacity. The updated scenario analysis done between draft and final plans testing different policies aimed at reducing carbon emissions shows little change in renewable generation development patterns across scenarios as compared to the Draft Plan, even with revised capacity values. That conclusion, based on the updated analysis, was identified and highlighted in the final plan.

A number of comments expressed concern that the Draft Plan's cost projections for solar PV beyond the period of the Action Plan are too high. **Solar PV prices have decreased significantly in recent years and commenters believe the trend is expected to continue before leveling out, suggesting the longer-term estimated costs for solar PV used in the RPM are not low enough. In contrast, at least one utility disagreed with finding solar photovoltaic (especially distributed solar photovoltaic) is cost-competitive where the Council's cost estimates include federal and state subsidies that skew cost, as compared to other resources.**

Response: Projections in the Draft Plan for long-term solar costs were reviewed based on the comments but were found to be within the range of most analysts' projections so the Council did not revise the long-term solar photovoltaic (PV) cost used in the draft. Going forward, the Council and its Generating Resources Advisory Committee will monitor solar PV costs pursuant to ANLYS-16 of the Action Plan.

The Council accounted for the Federal investment tax credit in the cost of solar PV, which was set to decrease from a 30 percent incentive to 10 percent in 2017 but, which in December 2015, was renewed by Congress so as to remain at 30 percent until 2019 where it will step down to 10 percent by 2022.

The Council also added a 50 MW utility scale solar PV reference plant on the West side of the Cascade Mountains as an additional resource option for some scenarios in the model. The location of the reference solar plant offers the potential to build solar near existing transmission to keep costs down.

The plan should include distributed solar photovoltaic resources as a resource selection in the RPM and factor them into the electricity load forecast where residential solar installations (rooftop solar) have been growing steadily in some areas of the region. The plan should also include distributed solar PV in more than just one scenario-- Maximum Carbon Reduction Emerging Technology Scenario—Scenario 3B.

Response: Distributed solar PV resources were modeled as a resource selection for three of the scenarios analyzed by the plan: Social Cost of Carbon-MidRange Scenario, Retire Coal w/SCC

MidRange Scenario, and the Maximum Carbon Reduction—Emerging Technology Scenario but the model did not choose to build them. Scenarios in which the selection of distributed solar resources was unlikely, excluded distributed solar PV as a resource option for model runtime considerations. The plan does incorporate distributed solar PV systems in the baseline load forecast. The analysis showed that the majority of solar PV system installations are forecast to occur in the residential sector with the level of generation from distributed PV systems estimated to grow from about 15 to 20 average megawatts in 2012-2013 to between 80 and 230 average megawatts by 2035. As a result of the comments, the Council also added a discussion of direct application renewables, including the range of solar PVs, to the chapter discussing conservation resources.

While the Draft Plan identifies Montana wind and Idaho solar as least-cost resources, the model constrains those resources due to perceived transmission constraints. Comments urged the Council to model Colstrip units 1 and 2 in Montana as closing over the next few years, and making available the transmission currently being used by those units to reach West Coast markets to instead be used to dispatch power from renewable resources such as Montana wind and Idaho solar.

Response: Montana wind was not being constrained by the model due to lack of transmission. In all scenarios that assumed all coal plants now serving the region are retired, the Council assumed that transmission for Montana wind was available beginning in 2026. Even with this assumption, the RPM's analysis did not show these resources to be cost-effective options.

A number of comments objected to the omission of geothermal resources as an option for the RPM during the development of the Draft Plan.

Response: As a result of the comments, the Council included a conventional geothermal reference plant as a resource option for the RPM to provide a potentially cost-competitive, dispatchable renewable resource option. The reference plant is located in Central Oregon with existing transmission available. The Council did include the 10 percent Federal Investment Tax Credit, which was renewed by Congress in December 2015, when estimating plant costs. Full levelized cost estimates for conventional geothermal resources are highly competitive to wind and solar but the region has seen only limited development of these resources largely due to their significant development risk.

The final plan recognized that geothermal resources do provide both winter and summer capacity and encourages the development of local, small-scale geothermal and other renewable resources, such as biomass technologies, that may be available and cost-effective now. To that end, the plan also recommends prioritizing research, development and demonstration funding in geothermal and other technologies where the potential for development in the Northwest is significantly better than in many other areas of the country.

The plan did find that Enhanced Geothermal Systems (EGS) have strong potential but because there are no commercially proven projects to date, they were analyzed as emerging technologies and were not modeled in the RPM. The plan recognizes demonstration projects for EGS being

developed in Oregon's Newberry Crater and calls on the Council to continue to monitor EGS along with other emerging technologies that have potential to be part of the future regional power system.

State renewable portfolio standards are misrepresented in the Draft Plan. State requirements are based on percent of retail sales, not load, and so excludes transmission and distribution losses.

Response: The Council agrees. The draft plan assumed existing renewable portfolio standard (RPS) requirements were based on percentage of load -- retail sales plus distribution and transmission system losses. The Council modified the RPM logic to determine RPS requirements based on retail sales. The effect was to reduce the amount of renewables needed to fulfill existing RPS.

The Council received many comments questioning the Council's assumptions about the pace at which newer resources and technologies would be available to the region.

Commenters felt the Council was too conservative in its estimate of when technologies would be ready for deployment in the region and felt the Council should have included many newer technologies and measures for the RPM to choose from. Energy Trust of Oregon, Northwest Energy Coalition, MADA Power, Blue Green Alliance of Washington State, Climate Solutions and multiple individuals and other entities commented that the model lacked a diversity of resources and tools that can help integrate renewables such as battery storage, grid-edge technologies such as smart thermostats, and energy market applications. Several comments called for a greater focus in the plan on smart grid technologies and applications as well as on demand side resources. Smart Grid Northwest recommends broadening the 'smart grid' definition to include and support investment in advanced metering infrastructure and transactive energy. Comments also recommended adding smart grid and demand side resources as part of the scope of a new demand response advisory committee the Council proposed in the Draft Plan.

Response: The Act requires the Council to give priority to those resources which are cost-effective, the definition of which also requires that the resource must be forecast to be reliable and available when needed. In planning to meet the region's energy and capacity needs, the Council has included in its supply curves only those technologies that are currently available and accepted in the marketplace. Some of the renewable resource technologies and associated measures called out by commenters for inclusion in the model were not found to be cost-effective as defined in the Power Act or were lacking sufficient information to even make a cost-effectiveness determination. The Council has interpreted the Act's requirement that the Council consider only those resources that are "similarly available and reliable" as being cost-effective to mean the Council should be conservative when forecasting large changes in technology or cost that make resource measures available and cost-effective.

For the Seventh Power Plan, many of the technologies that commenters wanted to see as part of the plan's Resource Strategy fell into this bundle of emerging technologies. For those resources that

did not meet the Act's definition of cost-effective, because they were not commercially available or cost-effective or the Council lacked sufficient information to make that determination, the Council discussed the state of their development as Emerging Technologies and included continued research, development, and demonstration of such technologies as energy-storage and smart-grid and no-carbon dioxide or low-carbon dioxide emitting generation in the Seventh Power Plan's Resource Strategy. The Council also supported their further development in the Action Plan (ANLYS-14 through ANLYS-17). In its scenario analysis, the Council did analyze the role emerging technologies could play in achieving carbon dioxide reduction in the Maximum Carbon Reduction – Emerging Technology scenario. That particular scenario was not used by the Council to identify a least cost resource strategy for the region given the speculative nature of both the performance and ultimate cost of emerging technologies. However, the Council did use the scenario to estimate the capacity and energy requirements that emerging technologies would need to fill in order to achieve carbon dioxide reductions beyond those achievable with existing technology. As a result of the comments, the Council also agreed to consider adding smart grid technologies, distributed standby generation, distributed energy storage, transactive energy and other technologies that function in a similar fashion to demand response to the scope of the Demand Response Advisory Committee responsibilities when the Council develops the committee's charter in 2016. Additionally, although the Council's plan is for the next twenty years, the Council does review it at least every 5 years, so technologies that are not currently viable will be reviewed and considered for inclusion in the Eighth Power Plan strategy, provided they meet the Power Act's criteria.

Many comments did not necessarily call upon the Council to revise its technical analysis or assumptions, but rather urged the Council to set forth a stronger vision for how renewables can contribute to the region's future resource mix and to identify opportunities for renewable energy resources to meet carbon reduction goals and displace existing fossil-fuel fired resources.

Response: The scenario analysis in the draft and final plans were not run with the goal of finding a way to displace all the region's fossil-fuel fired resources. That is not the mandate Congress gave the Council. The Council's power plan is designed to find the least-cost, least-risk resource strategy to ensure the region an adequate, economical, efficient and reliable power system over the next twenty years in the face of economic, regulatory, legal and political uncertainties. However, the Council did investigate, in both its draft and final plans, the cost and effectiveness of multiple policy options for displacing existing fossil-fuel fired resources in order to reduce carbon dioxide emissions from the region's power system. To the extent the plan's analysis can inform regulators, policymakers and other decision makers, the Seventh Power Plan can serve the region well.

The Seventh Power Plan's Resource Strategy assumes modest development of renewable generation, primarily utility-scale onshore wind and solar photovoltaic technology. The plan also assumes that geothermal, biomass, energy storage and battery technologies are viable resource options for the region, but with more limited potential in terms of resource availability or typical plant size. For other renewable resources that are not yet commercially available or deployable on a large scale now, the Seventh Power Plan calls for the Council to continue to monitor emerging renewables technologies such as distributed Solar PV, enhanced geothermal systems, offshore wind, wave and tidal energy, and to be prepared to analyze them and determine if they are viable resource

alternatives in the Eighth Power Plan. The Seventh Power Plan also calls for the development of a regional work plan to help adoption of emerging technologies.

While comments on renewables development were largely supportive, the Council did receive comments from the Washington Department of Fish and Wildlife supporting the inclusion of Action Plan item F&W-1 in the Draft Plan to investigate further the effects of resource development, especially renewable resource development and associated transmission, on the environment in general, and wildlife in particular. WDFW also recommended the Council: 1) research and develop a white paper analyzing tools such as Western Governor's Association's Crucial Habitat Assessment Tool, recent NEPA analyses for transmission lines and the Western Electricity Coordinating Council's Environmental Data Task Force and others that may be available to consider in advance of developing the Eighth Power Plan; and 2) organize a process to identify and protect high value wildlife areas from this type of new renewables development. In contrast, the Council received comments from utilities and utility organizations requesting removal of proposed Action Item F&W-1 on the basis that the Council is not an environmental protection agency and that siting of renewable resources and transmission are the responsibility of state and federal agencies which have public processes and procedures already in place to review new renewable resource and associated transmission projects.

Response: The Council recognizes there are federal and state agencies responsible for siting of renewable energy and transmission lines. The Council is, however, responsible for considering environmental quality when developing its regional resource strategy as well as estimating the quantifiable direct environmental costs and benefits of new resources. Carrying out its responsibilities requires a better understanding of the issues being raised by the comments, so the Council retained Action Item F&W-1 in the final plan. The Council agrees to work with representatives of those agencies responsible for siting renewable projects, transmission providers, state fish and wildlife agencies, Indian tribes, utilities and Bonneville to gain a better understanding of the nature and extent of the environmental impact of developing renewable resources and associated transmission as well as to better understand the regulations and programs already in place to address those effects.

Washington State Energy Office commented that the Council's plan should include bats in the discussion around developing a regulatory environment to protect eagles and other migratory birds. Other comments also called for careful consideration of the impact of renewables development on the environment– i.e. wind turbine effects on bats, birds, and bees.

Response: The environmental effects of wind turbines on bats is detailed in Appendix I as are federal regulations regarding eagle and migratory birds. In response to comments, Appendix I describing the environmental effects of electric power production, including renewable resources, was revised between draft and final to be more explicit and comprehensive.

Energy Efficiency Comments

Both the draft and the final plan relied on energy efficiency as the primary component in the Seventh Power Plan's resource strategy. There was broad support for the reliance on cost-effective energy efficiency to meet load growth.

Comments were divided as to whether the regional goal for cost-effective conservation set forth in the Action Plan item RES-1 should be a range or a specific number; and, what that average megawatt number or range should be. Supporters of a range, mostly utilities, utility organizations, and Bonneville argued that most of the 'low-hanging fruit' efficiency measures have been acquired so acquiring additional energy efficiency will be more expensive; not all utilities have a load that is growing so with less revenue coming in it is more costly to acquire energy efficiency; utilities need flexibility to decide which energy efficiency measures are most cost-effective for them; and a range of savings is a better goal given the many factors outside the control of utilities that affect their ability to acquire energy efficiency including consumer preference, availability of contractors, market conditions, state and national energy policy, gas price projections, etc. These commenters supported a range as was used in the Sixth Power Plan, as opposed to a specific goal to recognize the uncertainties in acquiring conservation.

In contrast, the Council received many comments from environmental, renewable resource and public interest organizations and individuals supporting a specific minimum target for regional conservation acquisition as opposed to a range. Many called on the Council to use the mid-point efficiency development from the Social Cost of Carbon Scenario as a minimum goal—which would place the target at around 1400 aMW by 2021. And, in the event the Council decided on expressing the goal as a range, the comments supported having as the low-end of the range essentially what the utilities supported as the ceiling or maximum amount of savings to be acquired.

Other comments asserted that a reduction of 4,500 aMW over the next 20 years is not enough and called for the Council to set a goal in the final plan of meeting 100% of load growth over the twenty-year plan with energy efficiency.

Response: The Council did not explicitly model energy efficiency uncertainty during the development of its 20-year resource strategy. However, the Council did run scenarios that tested some aspects of conservation uncertainty for the Draft Plan. Those scenarios tested the potential costs and benefits of developing more or less conservation over the near-term. The final plan also ran a Lower Conservation scenario that limited development of conservation to only that amount less than spot market prices, resulting in roughly 1200 average megawatts less energy efficiency by 2035 than the Existing Policy scenario. Even under that scenario, however, the development of energy efficiency was the most cost-effective resource available to offset regional load growth through 2030. Thus, although the RPM developed a varying amount of conservation across each future, in all of the scenarios and sensitivity studies examined except the Lower Conservation

scenario (which was explicitly designed to develop less energy efficiency) similar amounts of improved efficiency were found to be cost-effective.

In the Sixth Power Plan, the analysis determined that a 300 aMW range of energy efficiency development spanned 80% of futures. The Sixth Plan thus used a range to describe the amount of conservation the region should acquire and set a specific goal of 1,200 aMW that Bonneville had to budget for. For the draft Seventh Power Plan, the Council's analysis showed that within individual scenarios, the range of energy efficiency development was much narrower than in the Sixth Power Plan so the Draft Plan called for specific minimum conservation goals as opposed to using a range. The Seventh Power Plan analysis also showed that across scenarios, the range of 1300-1450 aMW spanned 80% of the futures. Based on its analysis for the Final Plan, the Council decided to maintain the targets as specific minimums but reduced the final two goals for the out-years (1400 aMW by 2021, 3000 aMW by 2026 and 4300 aMW by 2035).

Many individuals and organizations including UCONS, NW Energy Coalition, Save Our Wild Salmon, Sierra Club, Blue Green Alliance, King County, Idaho Conservation League and Oregon Department of Energy supported the inclusion of Action Item MCS-1 in the Draft Plan to improve participation in cost-effective energy efficiency programs by identifying segments of the region that may be underserved. Many urged the Council to go further and to prioritize delivery of energy efficiency to underserved segments, especially low-income sectors on the assumption that those sectors can benefit the most from the cost savings resulting from energy efficiency measures. UCONS' comment included specific suggestions for reaching those segments such as on-bill programs and actions to help regional customers living in manufactured homes. At the same time, the Council received many comments from utilities and utility groups indicating that while it may be good social policy to encourage utilities to make sure energy efficiency opportunities are available to low-income and other potentially hard to reach sectors, support for such policies was conditional on the program remaining cost-effective. There was also concern that the reporting requirements in the Draft Plan with respect to identifying hard to reach consumers could be too onerous. Bonneville agreed that efforts to ensure all cost-effective savings are identified and acquired is an important area of emphasis for the plan while also recognizing that such efforts will require additional resources and program support.

Response: The Power Act requires the benefits of energy efficiency programs to be distributed equitably throughout the region. In developing the Draft Plan the Council assumed that efforts to identify sectors underserved by energy efficiency programs would not jeopardize the cost-effectiveness of those programs. Action Item MCS-1 is not intended to force actions that would render measures or programs not cost-effective. Similarly, the reporting requirement was intended to yield data which can be used by Bonneville and the region's utilities to identify the existence of any hard-to-reach segments and involves capturing data that is already readily available. Thus, the final plan continues the language from the draft about identifying hard-to-reach customers but also continues to recognize that while it will take additional efforts to achieve all cost-effective conservation, such work is not to undermine the cost-effectiveness of the programs.

The Council received comments from participants of the 2015 Northwest Energy Efficiency Leadership meeting concerned about the region's ability to continue to acquire energy efficiency in light of stable or declining load growth for electricity at some utilities. The comment recommended 1) the plan underscore the need to put energy efficiency on the same plane as other utility resource investments; and 2) a regional forum or process bringing together utility regulators and investor-owned and consumer-owned utility leaders to explore the benefits of alternative business models and rate designs. The Washington State Energy Office within the Washington Department of Commerce commented the plan should include discussion of alternative rate structures in light of flat or declining load growth and increased adoption of distributed energy resources based on the results of the plan's analysis.

Response: The Council included Action Item REG-11 in the final plan-- a commitment to determine, by the end of 2016, regional interest in a forum to explore the benefits of alternative business models and rate designs as well as possible scoping, timing and deliverables of any forum or process.

The Council received a variety of technical comments concerning the Draft Plan's assessment of the region's energy efficiency conservation potential. Comments included pointing out errors in the data used in the Draft Plan, identifying better measure savings and cost data sources, and recommendations to incorporate updated building stock information.

Response: As a result of the comments, the Council made a variety of minor changes (e.g., adjusting down the Industrial Project Energy Management ramp rate and revising commercial lighting applicability factors) to the assessment of regional conservation potential. Overall, as a result of these adjustments and corrections in the data, approximately 40 aMW of additional technically achievable conservation potential was found. The changes also resulted in less residential and more commercial sector potential and minor shifts in costs and peak (KW) impacts. All of these updates were incorporated into the RPM. Additionally, Bonneville commented that it had recently decided to fund its energy efficiency programs by expensing their cost rather than capitalizing the costs over time. So between draft and final, the energy efficiency supply curve input data was changed to reflect that. This change resulted in a relatively minor overall reduction to the Total Resource Cost net levelized cost of energy efficiency in the final plan.

Pacific Northwest Utilities Conference Committee, Public Power Council and Western Public Agencies Group questioned the existence of and the estimates assigned to energy efficiency measures in the cost-effectiveness analysis of conservation resources for avoided investments in transmission and distribution capacity expansion as a result of reduced electricity demand.

The Council retained the transmission and distribution (T&D) credit for energy efficiency measures in the final plan where reductions in peak load resulting from efficiency measures defers upgrades or expansions and other associated costs to the T&D system. In response to comments, the Council

added Action Item COUN-12 in the final plan to work with the region's utilities and state regulatory commissions to improve estimates of deferred transmission and distribution amounts.

The Council received comments supportive and critical of its cost-effectiveness methodology for energy efficiency measures described in Draft Plan Appendix G. Oregon Department of Energy supports the Council's utilization of the capacity contribution of energy efficiency in cost-effectiveness calculations for efficiency measures but commented that any updates to the Council's cost-effectiveness calculations should be coordinated with state utility commissions to ensure the Council's goals are implementable and consistent with the methodology used by states. Energy Trust of Oregon commented it had already adopted the Seventh Power Plan estimates of the value of efficiency over different times of the day, week and year into its avoided costs and cost-effectiveness tools. Several utilities and utility organizations, however, asserted that the Council's recommendation that all conservation program managers and regulators use the Council's approach to measuring savings is overly prescriptive where the Council's regional "one size fits all" approach to measuring savings does not work for all utilities and utility regulators. These comments emphasized that what is cost-effective depends on a utility's individual needs. Public Power Council recommended the final plan endorse the possibility that utilities or other entities may engage in other methods for determining the cost-effectiveness or avoided cost standard of energy efficiency measures.

Response: In the final plan, the Council continued to recommend its methodology be adopted by the Regional Technical Forum, utilities, regulators and others given the Council's obligation to do a regional power plan—thus making a region-wide approach to its cost-effectiveness methodology logical. The Council did recognize in the final plan that individual entities may have different input values than those the Council and Regional Technical Forum use to determine cost-effectiveness of measures. The Council recommended that utilities with different inputs at least utilize a methodology that is consistent with that used by the Council.

The Council received many comments on the capacity value of conservation identified in the Draft Plan and the resulting action items. Utilities and utility organizations recommended that the Council use a lower estimate for energy efficiency peak capacity contribution in the final plan given that some utilities are finding a lower peak to energy ratio in practice than the Council's estimates based on data collected in the 1980s. Still other comments assumed that the capacity impact estimates were based on a single generic input assumption to the RPM. Almost all comments, whether supportive or critical of the Council's estimate of the capacity value of efficiency measures, however, did support the Draft Plan Action Item REG-1 calling for updated data for the development of a robust set of end-use load shapes to better understand peak contributions although commenters expressed concerns about the level of effort that would be required to update and improve the estimates.

Response: The Council acknowledges that the data are old and that newer data would better reflect current electricity usage. It would be speculative to assume however that newer data would find the estimate of the peak capacity contribution of energy efficiency used in the Seventh Plan is too high.

It could well be too low. The Council's estimate for the Seventh Power Plan is based on the best data available for inputs by measure. Recognizing the need for updated data, the Council retained Action Item REG-1 in the final plan as well as ANLYS-6, a commitment to establishing a forum to facilitate the sharing of research activities including research on reliability of energy and capacity savings and end-use load shapes.

A number of comments asserted the estimated Total Resource Cost of an energy efficiency measure must include the cost of the measure as well as all of its non-energy environmental benefits. The Washington Utilities and Transportation Commission commented that the health benefits of reduced emissions from wood smoke and particulate emissions should be included in conservation and generating resource costs. The WUTC supported proposed Action Item ANLYS-8 and the quantification of more health impacts in the future. Washington State Energy Office also supported proposed Action Item ANLYS-8 and recommended non-energy benefits from economic development be included and urged the Council to involve states in estimating such benefits. Other comments questioned whether looking at these type of non-energy impacts went beyond the Council's authority and expressed concern that there needed to be some bounds and rules on how the Council would approach such tasks. Idaho Power supported investment in reasonable research of non-energy benefits but did not support the inclusion of measures that rely exclusively on non-energy benefits to remain cost-effective. Idaho Power also expressed concern that investment in non-energy benefit research might overshadow other work done by the RTF.

Response: In the Draft Plan, the Council called on the RTF to analyze and states to consider, significant non-energy impacts (benefits and costs) of efficiency improvements such as water savings and human health benefits resulting from a reduction in wood smoke emissions. Such work is consistent with the Council's obligation to consider environmental quality in resource planning and to include direct quantifiable environmental costs and benefits of measures and resources in its determination of cost-effectiveness. In light of the comments which pointed out the not insignificant technical, policy and resource challenges associated with quantification of non-energy benefits, the Council concluded that further discussion with the region would be helpful in prioritizing the scope of this work. The Council agreed that the Regional Technical Forum (RTF) in cooperation with the RTF Policy Advisory Committee should develop guidelines, consistent with the Power Act, to identify and quantify, where appropriate, significant non-energy impacts of efficiency measures. The guidelines can inform prioritization of research on non-energy impacts and can inform decisions on cost-effectiveness. The Council also emphasized that where impacts cannot be consistently quantified, the RTF should work to develop model language which should be considered by state regulators in setting cost-effectiveness limits for measures and programs while also recognizing that it may not be appropriate for the utility system to pay for non-energy benefits that do not accrue to the power system. The Council also revised ANLYS-16 to focus on the non-energy impacts of water savings and conducting research to better understand those benefits, rather than giving these resources priority over other efficiency measures.

Many utilities and utility organizations called on the Council to remove draft Action Item BPA-6 in the final plan. BPA-6 called on Bonneville to study the costs and benefits of alternative energy efficiency program design, funding allocation and incentive mechanisms to ensure it is achieving all cost-effective conservation in the region. Northwest Requirements Utilities and other organizations commented that a regional power plan should not detail Bonneville's business management and that if the Council is concerned about how Bonneville's energy efficiency program is implemented, there are Bonneville public processes in which the Council can participate. In contrast, Tacoma Power supported the action item and suggested the study also include the inter-utility equity implications of allocating conservation dollars through bilateral transfer mechanisms. Bonneville also commented in support of the proposed action item. Bonneville is currently examining its energy efficiency program structure and delivery model in the Focus 2028 public process and felt the study made sense as part of the regional effort to understand options that may be available to Bonneville in the future.

Response: The Council retained the action item.

The Draft Plan discussion of regional resource utilization included the point that during times when regional resource output exceeds load and is not immediately needed, the energy and capacity of energy efficiency can be sold in the market and at least some if not all of its cost recovered. The same is not true for generating resources which, during periods when market prices are at or below variable operating cost, cannot recover their capital cost. Bonneville commented that while it may sell surplus power that results from acquiring conservation, it is important to recognize market sales is not a driver for Bonneville of acquiring conservation. Bonneville indicated the point of acquiring conservation is to reduce the amount of power Bonneville acquires from other resources and that considering surplus sales a driver of its obligation to acquire conservation, could lead to speculative marketing behavior and risk on the part of Bonneville.

Response: The Council in the draft did not assume that Bonneville would acquire energy efficiency in order to increase its surplus sales, and, similarly, the Council's RPM does not build energy efficiency to increase surplus sales. The Council's intention in the draft narrative was to point out that one of the benefits of low cost conservation is that all or a portion of its cost can be recovered if it is sold during a time of surplus as opposed to a generating resource such as natural gas which, when market prices are at or below variable operating cost, cannot recover its capital cost. The Council amended the final plan narrative to better reflect this point.

Natural Gas Generation Comments

The Council received a number of comments providing updated information or pointing out errors or inconsistencies in the Council's natural gas and wholesale market electricity price forecasts used for the Draft Plan including that the natural gas fuel price forecast used for the draft is too high. Natural gas prices dropped fairly significantly between the draft gas fuel price forecast produced in 2014 and the release of the Draft Plan in fall of 2015. There were also a number of comments pointing out that given the potential volatility of natural gas prices over the 20-year horizon of the plan, the forecast for natural gas should be higher than that used in the Draft Plan.

Response: The Council updated the natural gas price forecast between draft and final as a result of the comments and based on observation of recent sharp declines in natural gas prices. The Council also polled its Natural Gas Advisory Committee in November 2015 and the poll results suggested the price could be lowered slightly especially in the near-term given continued strong gas production, high storage inventory levels and an expected mild winter. The Council developed a new price forecast (medium, high and low) which resulted in the medium forecast for natural gas dropping from the draft forecast by approximately 1 dollar per million BTU. The updated lower natural gas prices were incorporated into the RPM as well as the wholesale electricity price forecast and conservation supply curves. Because the price for natural gas affects the full levelized cost estimates for new gas fired generating plants, those were also adjusted downward.

Given the comments and the uncertainty over gas prices over the longer term, the Council increased the range of uncertainty on natural gas prices for the final plan to account for a possible wider range of gas prices. In the RPM runs where future gas prices escalated to the point where operating a gas plant became uneconomical, in resource portfolios that built new (more efficient) natural gas plants, the plants continued to operate but at high carbon emissions costs; while less efficient gas plants (some of which likely are existing) dispatched less so that it was very unlikely there would be significant stranded costs.

The Draft Plan has an unrealistically low expectation of the need for natural gas-fired generation in the next six years. Many utilities commented that the decision whether and when to build new natural gas generation would need to be made by individual utilities and the plan should recognize that individual utilities may need to bring on natural gas if their particular situation calls for it.

Response: The plan acknowledges that its finding regarding the need for new natural gas generation is based on an assessment of regional need, not individual utility need and that modeling the region as one large utility does not capture physical and institutional barriers that may result in individual utilities needing to option or build new natural gas-fired resources even if they deploy demand response and develop the energy efficiency as called for in the final plan. The plan also acknowledges that as a practical matter, individual utilities and/or owners of gas plants will make their own decision to continue operations or not should any significant shift in fuel price occur that was not anticipated.

The Draft Plan relies too heavily on natural gas in the future given the carbon dioxide and methane emissions associated with gas plants and the water impacts caused by fracking. NW Energy Coalition, Sierra Club, Renewables Northwest, Climate Solutions and numerous other individuals and organizations supported the Draft Plan finding that it was unlikely any new natural gas plants will be required over the near-term, but opposed the finding that new natural gas plants were a cost-effective resource for the region to invest in over the longer-term (after energy efficiency and demand response) given the adverse environmental effects associated with the production and distribution of natural gas, especially methane emissions and the potential for future methane regulation.

Response: The Council's primary method for considering environmental effects is to reflect regulatory compliance costs in the cost of developing new resources. There is no regulatory scheme yet for curtailing methane emissions from the production and distribution of natural gas, so the Council could not include dollar-cost estimates of regulatory compliance in the total resource cost for natural gas plants in the RPM. And as the Council explained in the plan and elsewhere, information was too uncertain to try to quantify environmental damage costs as part of the total resource costs. The Council did, however, identify and consider the environmental effects of methane emissions from new natural gas plants in a qualitative way, describing the impact of natural gas extraction, processing, transportation and operation on methane emissions as well as EPA's proposed fugitive methane emissions regulations for new production activities in the oil and gas industry (see Appendix I). For the final power plan, the Council also estimated roughly what methane regulatory controls might add to the price of natural gas, based on available information, as a consideration on top of the costs included in the model. Even with uncertainties, however, the cost estimates for significant methane emission reductions in the natural gas system are low and are adequately captured by the natural gas price uncertainty (range) that is modeled in the RPM. Thus, even while taking the prospect of future methane emissions impacts into consideration, there is little change in the comparative value of natural gas as compared to other resources evaluated in the RPM and considered for the Plan's resource strategy.

Demand Response Comments

Demand Response (DR) played a much bigger role in the Council's Seventh Power Plan than it has in past power plans and consequently, there was a lot of interest and concern expressed in the comments about its suitability for the Council's plan. Comments were generally supportive of the Draft Plan's discussion of DR. Beyond that general support, however, comments diverged in terms of how much the plan should rely on DR over the next 20 years. Many comments, especially those from utilities, called for caution in terms of relying on a specific amount of DR to be acquired in the region as opposed to other resources, while others called for a much broader definition and role of DR in the final plan.

Many comments focused on whether or not the Council should set a target for acquiring demand response in the Seventh Power Plan. Bonneville, Public Power Council and many utilities supported retaining the language in the draft, which did not set a regional goal for DR development. Many utilities consider demand response too new and requiring of more lead time and experience to acquire than currently available. Idaho Power commented that setting a DR goal was not appropriate for the Council, but defining a range of potential instead of a hard target would at least acknowledge the unique situation of the region's utilities. Idaho Power also commented that the probability of the region actually acquiring DR in the amount and rate set forth in the Draft Plan is "very low" based on Idaho Power's experience in developing and dispatching DR. Pacific Northwest Utilities Conference Committee similarly commented that the DR potential estimates in the Draft Plan were overly-optimistic. In contrast, numerous individuals along with environmental and renewable resource advocacy groups wanted the final plan to be very specific about the level of DR that should be developed in the region, generally recommending 700 to 1,100 MW be developed by 2021.

Response: The Council reviewed detailed demand response cost and potential information and integrated that data throughout the development of the Seventh Power Plan. After review of the comments received, and review of revised analyses which indicated that developing a minimum of 600 MW of DR resources would be cost-effective in all futures tested which don't rely on increased firm capacity imports, the Council included a goal in the final plan for the region to acquire 600 MW of DR by 2021. The scenario analysis which was revised to include, among other things, consideration of quarterly ARMs and ASCCs, showed material change in demand response development through 2021 and a minimum DR development across all futures of 600 MW by 2021. The updated analysis showed that without developing energy efficiency and approximately 600 MW of DR, the region may not meet adequacy standards and could have difficulty providing reserves for balancing and flexibility. The region could build additional new gas-fired generation instead of acquiring DR, but this alternative resource strategy increases system cost by $4 billion and system risk by $5 billion. Given this potential risk, the Council felt that inclusion of a DR goal in the plan was appropriate.

Several comments were concerned with how the Draft Plan defined demand response. Smart Grid Northwest commented that the Draft Plan defined DR too narrowly and, by limiting it to a capacity resource, undervalued DR in terms of contributions to the power system. Smart Grid Northwest recommended the final plan adopt a broader view of and role for DR that includes actions to reduce power system costs and enhance system efficiency throughout the year, not just in times of system stress. Bonneville commented in support of the Draft Plan's proposed action for developing demand response capability but commented that DR is not a "resource" as defined in the Power Act. Bonneville recommended that DR be considered a tool that functions as a reserve in that DR can provide reliability to the system based on contract rights to interrupt, curtail or otherwise withdraw the supply of electricity to end-use consumer load.

Response: While the Seventh Power Plan focuses primarily on demand response that reduces peak load, the plan acknowledges that there are other applications of demand response such as the integration of variable resources like wind, that were not explicitly modeled for the plan, in part,

because the RPM does not have the capability to reflect other attributes of demand response such as balancing and flexibility. Consideration of the broader uses of demand response will be considered in scoping the activities of the Council's Demand Response Advisory Committee, which is set to be chartered by the end of FY2016. In addition, while some uses of demand response may not fit the strict legal definition of "resource" under the Power Act, the plan refers to demand response in the sense of the general definition of the word—as a source of supply or support.

RES-5 calls on NEEA along with the region's utilities, regulators, Bonneville and states to support regional market transformation efforts that can reduce the cost and expand the availability of products on the customer-side of the meter that could serve as demand response resources. Northwest Energy Efficiency Alliance commented that actions called for in RES-5 are not currently included in NEEA's business plan but that adding demand response features to end-use market transformation activities could be incorporated without large resource impacts. Northwest Energy Coalition and TechNet support inclusion of Action Item RES-5. Idaho Power does not support extending NEEA's responsibilities.

Response: The Council continues to support regional market transformation for demand response in the final plan given NEEA's potential capacity to pick up the work without significant resource impact. The Council also continues to include Bonneville and utilities that dispatch resources as implementers of regional market transformation efforts, in addition to NEEA.

Smart Grid Northwest, Northwest Energy Coalition, Washington Utilities and Transportation Commission, and PGE commented that demand response potential for provision of ancillary services is under-represented and under-valued in the Draft Plan.

Response: The plan (chapter 14: Demand Response) acknowledges that the use of demand response to provide ancillary services is not explicitly simulated in the RPM so the potential value of the resource in this area is not captured in the plan's analysis. Action Item ANLYS-20 was revised in recognition of the need to address ancillary services in future power plans.

Coal Generation Comments

Many individuals and organizations criticized the Draft Plan for not calling for the immediate closure of all coal plants in the region given the carbon dioxide emissions produced by coal plants and the contribution of those emissions to climate change. Comments called on the Council to investigate the cost of decommissioning Colstrip 1 and 2 with the expectation that the plants will be decommissioned. Comments stated that the (then) proposed EPA regulations for carbon dioxide emissions and potential methane regulations would render existing regional coal plants unsustainable and uneconomical. In contrast, utilities including

Idaho Power, felt that the Draft Plan's assumption that North Valmy was going to be retired in 2025 was speculative as the owners of the plant have not yet determined a closure date.

Response: As described in the power plan's overview, the issue for the Council, under the power-planning mandate in the Northwest Power Act, is to identify what *new* resources to develop in the region in order to meet demand over the next 20 years with due consideration to criteria such as compatibility with the existing regional power system and environmental quality. While the Council's power plan does not advocate for closing existing facilities, it does include planned closures or retirement of any existing facilities in evaluating what additional resources might be needed to ensure an adequate power system for the region. The retirements in the RPM of Boardman and Centralia were based on the public announcements of their retirement. The decision to include in the model, the shut-down of the two North Valmy coal-fired units in 2025 is based on public integrated resource plans, not an official announcement accompanied by a set retirement date. Language clarifying that distinction was added to the final plan.

A number of comments asserted that the Council's analysis presented in the Draft Plan did not fully account for and model the environmental costs of 'in-region' coal generating plants where the Council did not incorporate coal generator capital costs and where the model did not include out-of-region coal generating units that, while not serving Northwest customers, are being paid for nonetheless in some Northwest utility customers' electricity bills.

Response: The draft and final plans included the capital cost for environmental compliance for in-region existing coal (and other) resources. These were not modeled in the RPM since they do not impact the dispatch cost of existing resources, however these costs are included in the present value cost of each scenario reported in both the draft and final plans. The Draft Plan analysis however showed that the regulatory compliance capital costs of the region's coal plants ultimately did not affect the model's resource dispatch order, unlike operating costs which are significantly bigger (and were included in the RPM analysis). As for out-of-region coal plants, unless out-of-region generators are actually dispatching power to meet NW loads, they cannot be modeled in the RPM, even if part of their cost is recovered through NW customer bills.

Nuclear Generation Comments

The Council received comments from individuals and organizations of health providers opposing the inclusion of new nuclear generation in the resource strategy and calling on the Council to ensure any consideration of nuclear power included the life-cycle costs of nuclear generation and the management of radioactive waste. The Joint Task Force on Nuclear Power of the Oregon and Washington Chapters of Physicians for Social Responsibility requested the Council examine the costs of continued operation of Energy Northwest's Columbia Generating Station (CGS). Energy Northwest provided several comments intended to update, correct or supplement the Draft Plan's discussion of the environmental effects of nuclear generation. The Council also received a comment indicating the draft's portrayal of

small modular nuclear reactors was too optimistic in terms of cost and development milestones.

Response: The Council recognizes there are environmental and human health effects and risks associated with nuclear generation and the final plan comprehensively describes these effects as well as the impacts of mining, processing and disposing of nuclear fuel. The plan's resource strategy does not call for building any nuclear plants during the 20-year planning horizon of the plan. The plan does include advanced nuclear energy in the form of small modular reactors (SMRs), as a potential option for the region in the long-term but notes that SMRs have yet to prove their cost-effectiveness and have yet to be deployed commercially. Specific estimates quantifying the environmental impacts of building and operating SMRs is similarly not available at this time. The estimates used for SMR costs in the draft and final plan came directly from the company doing most of the development of SMRs in the region. None of the estimated SMR costs are directly included in the RPM analysis, however, since the Council considers SMRs an emerging technology. Lastly, the plan finds that if a goal of the region is to entirely eliminate carbon-emitting electricity generation, at the present time it is impossible to accomplish this goal without the use of nuclear power or emerging technology breakthroughs in other non-carbon emitting generation. The Council has pledged to continue to analyze and monitor the costs and viability of small modular nuclear reactors in Action Item ANLYS-14. The Council declined to perform an economic analysis of the Columbia Generating Station as part of the Seventh Power Plan process. The Council's task in the power plan under the Act is to analyze the costs of new resources and make recommendations on adding the least-cost resources, not to analyze the economic viability of existing resources or make decisions about those existing resources.

Hydroelectric Generation Comments

The Council received a significant number of comments from numerous individuals and environmental, fishing, and conservation groups including NW Energy Coalition, Sierra Club, Save Our Wild Salmon, and Idaho Conservation League calling for an analysis of the impacts of removal of the four Lower Snake River dams on the region's power system in the final plan, similar to the analysis done for the Sixth Power Plan. Many of the same comments also called for the Council to analyze the costs and benefits of maintaining the dams. The Council also received comments from utility and river user groups opposing analysis of dam removal and other analysis aimed at reducing the region's renewable resources. The comments found the Council's existing analysis adequately analyzed the implications of a loss in generation of roughly the same magnitude as the lower Snake River dams and explained the system implications.

Response: The Council did not model how the removal of the four federal dams on the lower Snake River might affect the new resource strategy. The Council did include a scenario that analyzed the potential planned loss of a large non-carbon-emitting resource roughly equivalent in energy and capacity to those four dams. That scenario was sufficient to identify the potential implications of a change of the magnitude of the removal of the Snake River dams for the alternative

resource strategies. The Council also included information in the plan narrative on how the removal of these dams might specifically affect the power system as compared to the more general scenario modeled. The Snake River dam removal analysis was not required of the Council in developing the plan's new resource strategy, as the Council has no information about the planned removal of these dams. The Council decided not to perform a specific cost/benefit analysis of the existing dams as part of the power plan effort for the same reasons the Council did not do so for the existing coal plants or the existing nuclear plant. Under the Act, the power plan is aimed at addressing the question of what new resources to add to the regional power supply as opposed to the value of or decisions about existing resources.

The Council received comments to preserve and strengthen the Council's "Protected Areas" –areas designated by the Council encompassing roughly 44,000 miles of stream reaches, where new hydropower development would not be appropriate because of the damage development and operation would cause to fish, wildlife, and habitat. (Wild Washington Rivers) Many individuals commenting objected specifically to the siting of a hydroelectric project proposed for the South Fork of the Skykomish River for a variety of environmental reasons as well as being unnecessary for power given less-costly alternatives.

Response: The Seventh Power Plan and the Council's 2014 Fish and Wildlife Program, which is part of the plan, designates areas subject to protection from future hydroelectric development. The Seventh Power Plan does not disturb those designations and does not include any new hydroelectric dams as part of the Council's 20-year resource strategy. The plan does consider small hydropower projects (not site-specific) as secondary resources, but does not explicitly model them given the environmental and economic barriers to developing new hydropower in the region including the Council's Protected Areas designations.

Operating Reserves Comments

Several comments including those from Public Generating Pool, Public Power Council, Snohomish PUD and Industrial Customers of Northwest Utilities called for the deletion of Draft Plan Action Items BPA-7 and COUNC-7 which call for an analysis of the most cost-effective method of providing operating reserves. The commenters objected to the Action Items as unnecessary and outside the Council's planning responsibility where utilities operating in balancing authority areas are already responsible for assuring they have sufficient operating reserves to meet reliability requirements established by North American Electric Reliability Corporation (NERC) and also have sufficient internal incentives to deploy such reserves in a cost-effective manner. The comments did support, however, the proposed Action Item supporting collection of regional operating reserve planning data as necessary to the power plan's determination of the amount of resources needed to meet load. Washington Utilities & Transportation Commission and Bonneville supported analysis of operating reserves as required by the Power Act which calls for the Council's plan to include "an analysis of reserve and reliability requirements and cost-effective methods of providing

reserves designed to insure adequate electric power and the lowest probable cost." Bonneville understands the Power Act to define "reserves" as existing to benefit Bonneville's firm power customers.

Response: The Council does not assume a definition of "reserves" different from the definition in the Power Act. The Council intended the action items as steps to improve the robustness of future power plans and as fully within its statutory authority as pointed out by Bonneville. The Council made no changes to the Action Items regarding analysis of reserves for the final plan.

Regional Resource Utilization Comments

The Council received comments following release of the Draft Plan critical of language in the Executive Summary and Resource Plan relating to regional resource utilization—specifically the concept of using existing generation to meet the region's needs instead of exporting some of it for use outside the region through market activity or power sales contracts. Bonneville commented extensively that the narrative misconstrues Bonneville's responsibilities and obligations under the Power Act with respect to sales of Bonneville's surplus power, excess federal power and firm power. Bonneville also objected to what it viewed as inaccurate characterization of disparities in the treatment of, and benefits received by, public as opposed to private utilities from the federal system. Pacific Northwest Utilities Conference Committee (PNUCC) asserted that modeling the region as one utility and allowing the federal hydro system to be optimized for all utilities (public and investor-owned) masks the reality that investor-owned utilities must compete with other buyers, such as California, for surplus federal system power. PNUCC recommended that the narrative section on Regional Resource Utilization be removed as outside the purview of the Council. The Washington State Energy Office commented that the seven-year contracts referenced in the narrative seem to be direct contributors to higher than necessary power costs insofar as they create counter-party risk that devalues Federal Columbia River Power System (FCRPS) power.

Response: Upon review of the comments, the Council redrafted the section because it was clear the Council failed to make its intended point. The section was intended to highlight some of the high-level results that came out of the analysis and was not intended to question Bonneville's adherence to the Power Act in terms of how or with whom Bonneville should contract with. Nor was the section intended to challenge the legality of how Bonneville designates power as surplus, excess federal, or firm according to definitions in the Act. Rather, the point the Council was trying to get across in the draft was simply that the least cost resource strategies identified by the RPM often reduce regional exports in order to serve in-region demand for energy and capacity. Thus, the most efficient use of the system from a regional perspective as well as the least-cost is to keep available power in-region. In the final plan, the Council rewrote the section extensively to clarify its point and to encourage the region to find ways to use existing generation to meet the region's energy and capacity needs while remaining consistent with the Power Act. Where one of the Act's primary purposes is to assure the Pacific Northwest of an adequate, efficient, economical, and reliable power supply, making full use

of the existing resources in the system prior to developing new resources can help ensure the power system remains both efficient and economical.

Load Forecast Comments

The Council received comments that the Draft Plan forecast did not account for announced changes in the direct service industry (DSI) loads in the region.

Response: The Council updated its DSI load forecast to reflect the short-term loss of the Intalco and Wenatchee aluminum smelter loads in Washington and the permanent closing of the Columbia Falls aluminum smelter plant in Montana. DSI loads were revised downward from Draft Plan estimates from 766 to 83 aMW for 2016; from 773 aMW to 275 aMW in 2017; and from 772 aMW to 338 aMW for 2018-2035. The Council also expanded the load forecast range in the RPM to simulate loads with a wider range of uncertainty given the possibility that the aluminum smelter load may not fully return to its full demand and given potentially higher long-term regional electricity loads as a result of potential development of three new methanol production plants –one in Oregon and two in Washington -- to come online in the 2020-2022 time period and which could potentially increase regional electricity loads by about 800 aMW and increase regional natural gas consumption by 50 percent.

Washington State Energy Office commented the final plan should include a discussion of regional demand for electric vehicles (EVs), EV integration and storage potential. Oregon Department of Energy commented that the load forecast did not include electric vehicles or did so insufficiently where the Council's projected EV utilization falls short of likely utilization necessary to meet regional climate goals and comply with programs such as Oregon's clean vehicle and clean fuel standards and the CA Car Standards.

Response: Electric vehicle loads were included in the load forecast for both the draft and final plan. The Council's analysis of market potential from EVs incorporated a wide range of market acceptance. In the high range scenario, the Council projects that over 860,000 EVs will be operating in Oregon and over 2.7 million EVs will be operating in the region by 2035. The Council included in the final plan Action Item ANLYS-5 where the Council looks to enhance its modeling of the potential impact that electrification of the region's transportation system could have on regional electricity demand and load shape.

Utilities commented that the load growth in their service areas were higher or lower than the Draft Plan's regional forecast. Idaho Power noted their load growth has been higher than the regional forecast. Grays Harbor PUD commented that the data on which the Council bases its load forecast was based on large urban cities which is misleading and does not account for the many rural utilities that make up the region.

Response: The Council agrees that its regional forecast of economic and electricity load may not reflect every utilities' situation. The Council's forecast is driven by each state's economic projection for their own state. The state-level forecasts are reviewed and further refined by the Council's Demand Forecast Advisory Committee in which economists from each state participate. The Council only uses national forecasts to create the forecast range. While each state's economic forecast is a driver in determining future regional electricity load, the Council does not rely on just one forecasted load for the region in determining its 20-year resource strategy. Rather, in developing the resource strategy, the Council looks at a wide range of future loads to account for future uncertainty.

Comments questioned the differences between the Draft Plan's resource adequacy forecasts and those prepared by the Council's Resource Adequacy Advisory Committee (RAAC) and others. Idaho Power, Pacific Northwest Utilities Conference Committee, and others commented that the Draft Plan used a load forecast that differed substantially from the forecast prepared by the RAAC in May 2015.

Response: The forecasts are not in conflict, they are based on different assumptions and inputs. The RAAC 2015 assessment was based on Sixth Power Plan data and reflects loads inclusive of the Sixth Plan's target conservation levels but do not include federal standards and codes incorporated into the forecast loads for the Seventh Power Plan. In contrast, the loads used in the Current Policy Scenario in the Draft Plan were based on averages from the 800 different futures and include the Seventh Power Plan's range of conservation targets and reflect the impact of new federal standards adopted since the Sixth Plan which has the overall effect of reducing the regional load forecast as compared with the RAAC study forecast. The Council did however include Action Item ANLYS-4 which commits to reviewing and reconciling peak load forecasting methods used for long-term resource planning (RPM model) and short-term Adequacy Assessment (GENESYS model) before the next Resource Adequacy Assessment is performed by the RAAC.

Scenario Analysis Comments

Many organizations and individuals including Northwest Energy Coalition, Climate Solutions, Sierra Club, Renewable Northwest, and Washington Environmental Council commented the Regional RPS at 35% scenario was not carefully constructed to ask the important question of how renewable resources can most effectively contribute to a low-carbon, least-cost system. Commenters criticized the scenario as unrealistic where it is designed to add renewable resources without retiring existing coal or natural gas plants beyond those already committed to retire. According to the comments, RPS policies under consideration focus on replacing, carbon-emitting resources with clean energy resources so the Regional RPS at 35% scenario should have retired existing coal plants on an orderly basis and then built cost-effective renewable resources to meet system needs. The comments requested the scenario be renamed or removed from the final plan where the assumptions result in the scenario looking unrealistically expensive. Comments also came in that were supportive of the scenario analysis on carbon emissions strategies. For example, Eugene Water & Electric

Board supported the analysis as looking to discern the most economic ways to reduce carbon in the region's electricity sector.

Response: The Council agrees that the Regional RPS at 35% scenario was not designed to evaluate how renewables can contribute to a low-carbon, least-cost system. The scenario was designed to ascertain the technical and financial implications of a hypothetical policy that calls for adding renewables to the system to reduce carbon emissions. The Council agrees that using different inputs to the scenario or changing the scenario's parameters could result in more renewables being developed under the scenario, and that such analyses could benefit policymakers. As a result of the extensive comments received following release of the draft, the Council did add additional scenarios between draft and final plan that included removing coal plants, including a cost of carbon, and building renewables based on system need. The Retire Coal with SCC_MidRange & No New Gas scenario retired all existing coal plants serving the region, imposed the federal government's mid-range estimate for the Social Cost of Carbon beginning in 2016 and brought on renewables to replace coal. This scenario resulted in the lowest carbon dioxide emissions by year 2035 of the scenarios run, but had the second-highest system cost. The Retire Coal scenario which retired all coal plants serving the region by 2026 but which assumed the continued operation of existing gas-fired generation, resulted in a tie for the second-lowest amount of carbon dioxide emissions in 2035 at a system cost considerably less than the previous scenario discussed-Retire Coal with SCC_MidRange & No New Gas (system cost of 98 billion 2012$ versus 126 billion 2012$). The other scenario with the second-lowest amount of carbon dioxide emissions in 2035, the Max.CO2 Reduction – Exist. Tech. scenario resulted in the same level of emissions in year 2035 but at a considerably higher system cost. In summary, the scenarios analyzed for the draft, and confirmed by the additional scenarios analyzed for the final, show that it is possible to reduce carbon emissions beyond the emissions level currently forecasted for year 2035 (Existing Policy Scenario), but it will come with a price. The cost of the power system increases as you retire existing inefficient gas plants and rely on non-carbon emitting sources to replace the retired coal and gas plants.

Several comments called out the Draft Plan's "Existing Policy" scenario as misleading for giving insufficient consideration to how the EPA's Clean Power Plan regulations (promulgated during the development of the power plan) will affect the Northwest electric sector. Comments requested the Council either change the name of the scenario to something other than the Existing Policy scenario or describe the assumptions that went into the Existing Policy scenario in the plan's narrative and refrain from using it as a reference case in the final plan.

Response: The Council did not change the name of the scenario between the draft and final plan. The final plan does consider the Environmental Protection Agency's regulations and finds that the least cost resource strategy results in regional carbon dioxide emissions below Clean Power Plan (CPP) limits at the regional level thus satisfying the CPP's goals. The plan acknowledges that additional actions may be needed to achieve the CPP's goals at the state level for each of the four Northwest states, but the Council, being a regional body charged with developing a regional plan, did not model individual state emissions reductions strategies in the Seventh Power Plan.

Northwest Energy Coalition, Renewable Northwest, Climate Solutions, Sierra Club and other environmental and renewable resource groups and individuals recommend that the Council support a regional low-carbon grid study for the northwest. Renewable Northwest commented that a study focused on determining actions necessary to run the grid reliably with the least amount of carbon dioxide emissions would be useful in providing perspective and data. Oregon Department of Energy and TechNet also recommended an action item on quantifying the benefits of grid resiliency.

Response: The Council agrees that while participation in a low carbon grid study could enhance data available for use in the Eighth Power Plan, the study proposed has a different overall objective (low carbon emissions) than the power plan (least-cost and least risk). Given the prospect of future environmental regulation aimed at achieving, or resulting in, a low carbon power system for the Northwest, the Council decided that continuing to monitor current and proposed federal and state regulations regarding the impacts of generating resources on the environment as well as any subsequent impacts on the regional power system (ANLYS-20) may achieve a similar objective as a low carbon grid study and require less staff resources.

Transmission comments

Idaho Governor's Office of Energy Resources commented that the Council should enhance the discussion and analysis of the region's electrical transmission system and include a summary of transmission plans from the regional transmission planning groups as well as a more specific assessment of the regional electricity market.

Response: The Council agrees that a more coordinated effort between transmission and resource planners is needed given the addition to the power system of variable resources, distributed generation and demand response measures. Including a summary of regional transmission plans was beyond the scope of this power planning effort but the Council included Action Items ANLYS-24 and ANLYS-25 which call for continued tracking of the work of regional transmission system planners to assess implications for the power plan as well as working with the Western Electricity Coordination Council's Transmission Expansion Policy Planning Committee to obtain transmission data that can be incorporated into future power planning assumptions about generation and load outside the region.