

February 21, 2020

RE: Northwest Power and Conservation Council 2021 Power Plan

Thank you for your consideration of these comments on the Northwest Power and Conservation Council's (NWPCC) 2021 Power Plan (Plan). The Public Power Council (PPC) is a trade association representing the interests of the non-profit electric utilities who are preference power customers of the Bonneville Power Administration (BPA). PPC and our members are participating in the development of the Plan and will continue to do so throughout the process. PPC's members represent over 90% of BPA's Tier 1 load and pay for the majority of BPA's power revenue requirement, including the NWPCC budget.

The 2021 Plan will serve the entire region as a guide for resource acquisition, but it can uniquely impact BPA's consumer-owned utility customers when BPA takes actions consistent with the final plan. Assumptions and decisions made now can impact BPA's Energy Efficiency and resource acquisition targets and strategies, the costs of which are ultimately passed down to PPC members. As such, the public power community wants to ensure that the Plan is as accurate as possible to most appropriately guide BPA in these areas.

Additionally, as the NWPCC navigates its statutory obligations in creating the Plan, it should also be aware of its statutory boundaries. For example, areas related to BPA's financing or marketing strategies are outside the purview of the Plan and should be left to BPA's discretion. If Council Members or staff have questions about whether specific topics or policies fall within the NWPCC's planning scope or will provide value, both public power and BPA are available to discuss these topics.

NWPCC staff have provided valuable early analysis on the Plan's inputs and have worked collaboratively with PPC to address concerns and questions. PPC is submitting these preliminary comments to clarify positions on several important issues and to help support analysis that will create a Plan that provides the region with effective and flexible guidance. The topics PPC would like to address cover a wide range of areas, from forecasts and inputs, to modeling decisions and assumptions, as well as timelines for feedback and comments. PPC encourages NWPCC Council Members and staff to reach out if they have any questions.

Broad takeaways from the comments are:

- The Plan should be developed with the goal of providing valuable analysis and insights for the region in a dynamic and rapidly changing energy and regulatory landscape.
- Climate change impacts, especially secondary impacts, are highly uncertain, and the NWPCC should take extra care to ensure that these assumptions are well supported. For these reasons, changes to migration patterns as a secondary impact of climate change should not be included as a base case input at this time.
- Transmission constraints and modeling in the new GENESYS should reflect real-world historical values. The possible use of a ‘fundamentals-based’ approach should reflect this.
- Sufficient time needs to be given to BPA and other stakeholders to review and comment on supply bin cost curves before they are finalized for use in the Plan.
- Demand Response assumptions were not well supported in the 7th Plan and led to inaccurate resource portfolios in some scenarios. NWPCC should engage with relevant stakeholders to ensure the 2021 Plan’s inputs are accurate.
- Natural gas prices are more likely to be near the medium and low NWPCC forecasts. Plan inputs should reflect this.
- Assumptions around whether natural gas plants will be built to serve energy and capacity needs will have a significant impact on modeling outputs and plan recommendations. The NWPCC should explicitly explore scenarios of limited gas builds. Certain policies are being discussed and developed around the region that would limit gas builds, and more information is needed on how the prevailing concepts and plans could impact the region’s resource mix and cost.
- As the region transitions towards a low-carbon future, small modular nuclear reactors may become an effective capacity resource that lowers overall portfolio costs. They should be included particularly in Scenarios related to GHG reduction analysis.

Topic Analysis

Climate Change

The use of climate change data is new to the Plan and presents a variety of challenges. Streamflow data, daily temperature data, and hourly load profiles will all be based on modeling assumptions and data conversion. NWPCC staff have done a thorough job of explaining the need to simplify some of these conversions. For example, staff proposes to use daily load profiles that are based on a single year, rather than the full range of historical load profile data. This appears to be a reasonable compromise between accounting for uncertainty and creating a manageable and streamlined approach, and PPC is not opposed to this methodology. Still, it will be vital to track how these changes

impact the plan's ability to capture the within-day volatility and resource needs as well as volatility from year to year.

Using climate change data will provide insights about resource needs under changing load and hydro conditions, but it will be important to provide this information in the context of existing conditions. For decisionmakers and policymakers, it is highly useful to be able to compare multiple possible outcomes and decide on a strategy given this information. This is precisely the reason the NWPCC has chosen to include several Scenarios in the Plan. The final plan should include an analysis of resource needs using historical data to provide a reference point for understanding how incorporating climate change data has impacted resource selection.

Secondary Impacts of Climate Change

As mentioned above, planning for and incorporating the variety of potential impacts from climate change introduces a significant number of unknown outcomes into the planning process. As the NWPCC has worked through the initial phases of the Plan, staff have sought to consider a comprehensive range of these possibilities. To this end, they have analyzed and consolidated a large volume of research on the secondary impacts of climate change, including potential shifts in population migration patterns across the US. This analysis has provided a good context to think about how climate change might impact the region, but significant uncertainty still exists about future outcomes.

NWPCC staffs' summary of the secondary impacts of climate change includes an acknowledgment that in some studies, the "uncertainty of outcomes contributed to between 40% and 100% of the variance in impact." This uncertainty is enough to call into question the plan for including secondary impacts of climate change as a base case assumption. Among the drivers of the NWPCC's demand forecast, population migration due to climate change is one of the most impactful inputs. PPC is not opposed to including population migration impacts of climate change as a sensitivity analysis, or as a piece of a larger scenario analysis. However, including it as the base case will change the reference point against which other sensitivities are compared. Given the uncertainty around this analysis, PPC does not believe it is prudent to include it as a base case at this time.

BPA Scenario

Among the Scenarios selected for the Plan, NWPCC is proposing to look at options to *Optimize BPA's Portfolio*. The first draft of this Scenario included topics and assumptions that would not have been feasible given BPA's statutory obligations. NWPCC staff has been receptive to PPC feedback and has worked to adjust the assumptions and analysis to reflect real-world constraints and obligations. PPC would like to acknowledge this responsiveness and thank NWPCC staff for their collaborative

approach. The current Scenario to *Optimize BPA's Portfolio* is much improved and could prove to be a valuable resource for the agency.

Natural Gas Forecast

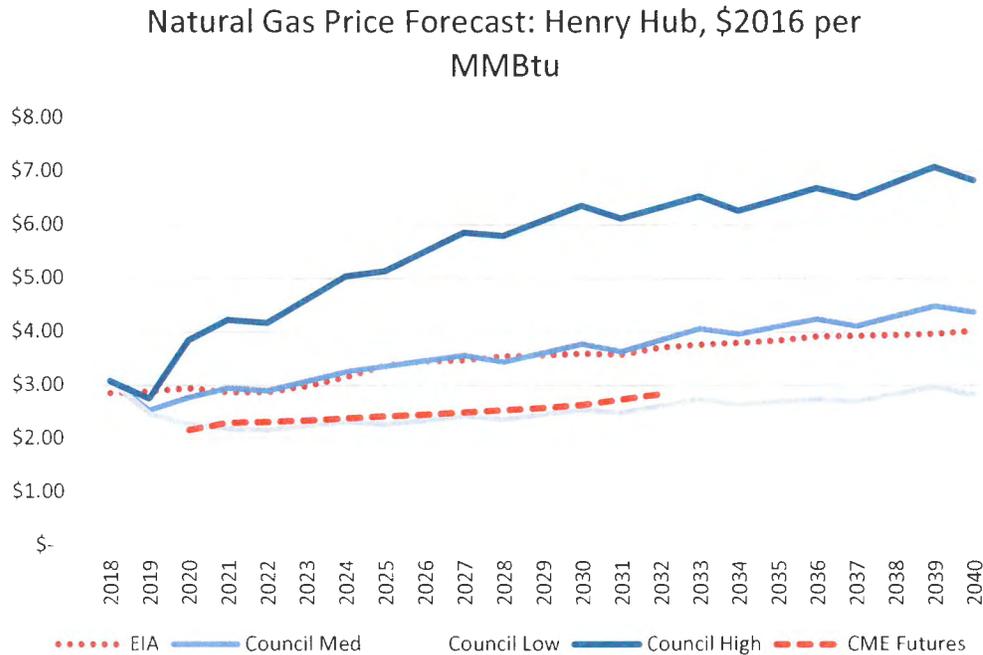
NWPCC staff have provided in-depth information about the drivers of natural gas fundamentals such as consumption and supply potential. Based on this information, and the input of experts from around the region, they have also provided a range of natural gas price projections, including low, medium, and high forecasts. Between these three options, council staff have broadly covered the likely range of prices that could occur. However, there are still decisions to be made about how to incorporate these forecasts into a baseline input for the Plan.

The 7th Plan had a similar range of initial forecasts, but the NWPCC ultimately decided to employ a trendline that was between the medium and high forecasts. This decision disregarded the likelihood that prices would fall closer to the low forecast than the high forecast. PPC is concerned that the 2021 Plan might follow a similar path. Figure 1 shows the NWPCC's forecasts in comparison to other industry leading forecasts. The NWPCC's medium forecast is close to the EIA forecast, and the NWPCC's low forecast is close to the CME Group's current natural gas futures pricing.

While the NWPCC's high natural gas pricing forecast represents a possible future, it is much less likely to occur than either the medium or low forecasts. Futures pricing, like the CME Group's pricing in Figure 1, represents the future value that energy traders have transacted for a commodity. This pricing does include some amount of hedging and calculation of risk, but it provides a very good overall indication of where most analysts expect gas prices to be. PPC believes that the NWPCC should use a baseline gas price that reflects actual future transactions, which currently fall near the Low forecast. If NWPCC Council Members are concerned that carbon policies may change the price of natural gas, these impacts should be explored in the Scenarios on *Paths to Decarbonization and Greenhouse Gas Cost Tipping Points*.

See *Figure 1* on the following page for a graphical representation of gas pricing forecasts.

Figure 1



Natural Gas Buildout Assumptions

The NWPCC’s assumptions on whether gas plants will be built to serve energy and capacity needs will have a large impact on resource selection in the Plan. This is because gas plants are currently the marginal resource designated to serve load, and they are one of the most cost-effective ways of meeting the region’s capacity needs. However, state policies, such as the Washington Clean Energy Transformation Act, place restrictions on the construction and purchase of power from gas plants. It will be important for both policymakers and utilities to understand how limiting this flexible capacity resources will impact costs and system reliability.

Integrating the impacts of these policies into models such as AURORA and GENESYS requires staff to make assumptions about how the policies will be executed in the future, as well as the overall likelihood that investors will build a plant that is subject to political risk. The NWPCC’s broad rule to only include policies or measures that have been approved serves as a good starting point, but there is still significant uncertainty on future rulemaking and legislation. To date, NWPCC staff have done a good job of highlighting the potential impacts of incorporating different policy constraints in these models.

Recent presentations at NWPCC Council Meetings showed that the Scenarios related to *GHG Cost Tipping Points* and *Paths to Decarbonization* should address some situations

where gas plant builds are limited. However, PPC believes that explicitly modeling futures where no new gas plants are built will help policymakers understand the impact of limiting key resources in developing legislation. Given the complexity of proposed ‘in-scope’ work for the *Paths to Decarbonization* Scenario, PPC expects that discussion about these modeling constraints will be ongoing as the Plan develops.

Small Modular Reactors

Energy Northwest has presented NWPCC Council Members with analysis by E3 on the potential value of Small Modular Reactors (SMR) in low-carbon energy systems. According to this analysis, as the Pacific Northwest moves towards 100% clean energy, the region will begin to spend significantly more to provide reliable electric service if it does not have access to dependable capacity resources. SMRs provide one way of meeting this need for capacity.

PPC supports including SMRs as a resource option in the Plan’s *Paths to Decarbonization* and *GHG Cost Tipping Point* Scenarios. Including SMRs in GHG-related Scenario analysis will help provide information for planning and policy making during the next five years, a timeframe that may be highly impactful to future long-term legislation. Additionally, many PPC members have expressed interest in understanding the potential value of SMRs in a low-carbon future. PPC acknowledges that while there is some cost and licensing uncertainty for SMRs, they are based on proven technology and have already passed a significant number of regulatory hurdles.

GENESYS Model Vetting

The new GENESYS model is potentially an important asset in developing the 2021 Plan. Its ability to simulate within-region transmission constraints and other system details with more granularity than the classic GENESYS should provide useful information, especially as the energy system becomes more interdependent and complex. However, it appears that the data-validation process for the new model is running behind schedule. PPC believes that there is value in using the new GENESYS, but that should not come at risk of using inaccurate inputs or modeling. PPC believes it is preferable to delay the Plan’s timeline than to risk using an inaccurate model, should a tradeoff be necessary.

Transmission Constraints

As noted above, transmission modeling in the new GENESYS is significantly more detailed and potentially informative than in the classic GENESYS. However, as the 2021 Resource Adequacy Assessment showed, it is possible for the model to put out results that do not mirror historical system usage. This can lead to inaccurate adequacy assessments and conflicting information about whether new resources are needed to meet demand. The NWPCC has proposed a scenario that looks at *Reliance on Extra-Regional*

Markets for Resource Adequacy. This scenario may provide a useful look at the Northwest's risk tolerance and the potential to lower total resource buildouts, but it may also lead to a drastic misunderstanding of the region's energy and capacity needs if the model does not reflect real-world transmission and generation constraints.

Similarly, NWPCC staff have supported a "fundamentals-based" approach to modeling, which may work in theory, but only if the model accurately reflects real-world physical constraints and behavior. The energy system is complex and dynamic, and it is unlikely that a computer model will accurately or completely reflect all operational or fundamental realities. PPC is concerned that relying on the model to define transmission capacity and extra-regional energy availability may lead to inaccurate reliability analysis. PPC does not oppose attempting to use a fundamentals-based approach to modeling in the new GENESYS. However, PPC does request extreme diligence in this area, as well as an assurance that if modeling outputs do not reflect historical real-world values, an alternate approach may be used. Any modeling that includes transmission constraints should not contain imports that exceed maximum historical real-world values.

Comment / Feedback Timing

In an effort to be thorough and accurate, NWPCC staff have added a significant number of supply curves to the Energy Efficiency supply potential. This work has been ongoing, and new supply bins continue to be shared for technical review and feedback. PPC is concerned that the current "pencils down" deadline *does not include enough time for BPA and any other regional stakeholders to provide feedback* before the curves are finalized. Without sufficient review, there could be errors or other unforeseen issues with the supply curves that impact Plan outputs.

Because the Plan will influence regional and BPA specific Energy Efficiency goals, it is in the NWPCC's interest to ensure that the region completes a full review of the NWPCC's work. PPC believes it is more important to use correct data than to stick with a self-imposed timeline. Council staff should work with BPA and others to come up with a mutually agreeable plan that provides enough time to thoroughly review the cost curves and provide feedback.

Demand Response

The 7th Power Plan contained assumptions regarding demand response potential and costs that have not come to fruition. These assumptions were not well supported, but nonetheless played a major role in resource portfolios in some scenarios. Given the potential for capacity and greenhouse gas constraints in the future, it is essential for the 2021 Power Plan to have well vetted assumptions about the availability, cost, and operational viability of demand response resources.

Thank you for your consideration of these comments.

Sincerely,



Scott Simms

Executive Director of the Public Power Council