



Public Generating Pool Comments on Draft 2021 Power Plan

The Public Generating Pool (PGP¹) appreciates the opportunity to offer our comments and suggestions on the Draft 2021 Northwest Power Plan. Our comments and recommendations are focused on the sections related to the plans' discussion of resource adequacy in the Pacific Northwest ("Region"). While PGP applauds the Council for their ambitious attempt to enhance load and resource modeling for the Region, we remain concerned that the modeling methodology and assumptions have not received sufficient peer review to be used for reaching any definitive conclusions on adequacy in the Region.

I. Modeling Methodology

For the past several Power Plans, the Council relied on the GENESYS model to analyze adequacy in the Region. For hydro resources, the previous version of GENESYS ("Classic GENESYS") translated month-average energy to sustained peak energy by applying formulas derived from a trapezoidal optimization technique. It is PGP's understanding that these formulas were vetted with hydro resource operators in the Region and calibrated to actual hydro resource operations. New GENESYS replaces this method with an hourly hydro-regulation model that optimizes dispatch of storage resources to forecasted prices. PGP acknowledges that this new approach has the potential for more accurate dispatch of hydro resources, but PGP is concerned that there has been insufficient vetting and peer review of these results to draw conclusions about the adequacy of the Region. In fact, PGP is aware that initial review of these results by hydro operations experts in the Region have found that there are unrealistic or infeasible hydro resource dispatch.

Optimization of the complex hydro system in the Region is a very difficult task. PGP is aware that implementation of optimization models used at BPA and other hydro-dominant utilities can take years to sort out, given the interplay of the constraints related to flood risk managements, operations for endangered species mitigation, maintaining reliability, etc as well as incorporating the uncertainties that are inherent in a hydro-dominated system. PGP encourages the Council to continue the development of this model but advises the Council to not reference at this time any definitive determination of adequacy that results from this new GENESYS model.

¹ PGP represents eleven consumer-owned utilities in Washington and Oregon that own almost 8,000 MW of generation, approximately 7,000 MW of which is hydro and over 97% of which is carbon free. Four of the PGP members operate their own balancing authority areas (BAAs), while the remaining members have service territories within the Bonneville Power Administration's (BPA) BAA. As a group, PGP members also purchase over 45 percent of BPA's preference power.

II. Modeling Assumptions

a. Climate Change Impacts on Streamflows and Loads

Previous Power Plan's use of the Classic Genesys model relied on the use of the eighty-year historical streamflow set for modeling hydro resources. While the use of these eighty water years encompassed a wide range of water volume and runoff shape scenarios, this approach did not allow for consideration of climate change impacts or the ability to use daily streamflow data.

In this Draft Power Plan, the New GENESYS model incorporates the latest findings of the impact on climate change on streamflows² in the Pacific Northwest as well and considers daily streamflows instead of period-averaged streamflows used in Classic GENESYS. While this is a step forward, it comes with a cost – instead of considering 80 different streamflow scenarios, the studies in this Draft Power Plan consider only 30 streamflow scenarios. An examination of the differences between these data sets shows that the lowest water year captured in the New GENESYS study is 92 Maf, whereas the 80-year historical set³ includes two water years have water year volumes of 77.6 Maf and 81.6 Maf. PGP believes that the data set used by GENESYS does not capture a sufficiently wide range of water conditions to accurately determine adequacy and advises the Council to re-examine the New GENESYS streamflow data set to see if lower water years could be included.

Another result of using this new streamflow data set was the decision to also use the temperatures associated with each of the daily streamflow conditions to forecast loads. While the Classic GENESYS approach applied many different load profiles to each streamflow scenario which resulted in hundreds of different combinations of loads and streamflows, the New GENESYS approach results in only 30 different combinations of loads and streamflows. While PGP acknowledges that there is often a correlation between loads and streamflows, PGP is concerned that the current approach understates the risk of extreme temperatures and advises the Council to revisit their treatment of loads in these studies.

b. Imports into the Region

The adequacy analysis in the Draft Power Plan assumes that the Pacific Northwest can import on any hour up to 2500 MW in the Winter and 1250 MW in the Summer. This is a significant change from previous adequacy studies that limited summer imports from the Southwest to only hours HE10-14. Furthermore, there is lack of modeled variability in weather, load and resource conditions in areas from where imports are assumed.

² <https://www.bpa.gov/p/Generation/Hydro/Pages/Climate-Change-FCRPS-Hydro.aspx>

³ https://www.nwrfc.noaa.gov/water_supply/ws_ranking.cgi?id=TDAO3&per=OCT-SEP

PGP believes that grid conditions that have been observed the past two summers demonstrate that it is very unlikely that the Southwest will have sufficient surplus to export during peak hours or when there is no solar generation. PGP recommends that adequacy studies only allow Southwest imports in the Summer between dawn and HE14.

c. Treatment of Forced Outages

The New GENESYS model has changed the treatment of forced generator outages. Where Classic GENESYS performed a stochastic modeling of forced outage, New GENESYS applied the forced outage as a derate to the generator. For example, assuming a forced outage rate of 5.9%, the Columbia Generating Station with a capacity of 1120 MW would have had a generation profile 1120 MW in 94.1% of the scenarios and 0 MW in 5.9% of the scenarios. New GENESYS would model this resource as 1054 MW ($1120 * .941$) in all scenarios. PGP believes that the New GENESYS methodology does not correctly capture the risk of forced outage and recommends that the Council revert back to stochastic modeling of forced outages – especially for large generators.

PGP appreciates the willingness and openness of Council staff to discuss their analysis and the evaluation of the impact of significant build-out in other parts of the west may have on the Northwest. The model that is being built can be an important tool to explore these effects. However, at this time, PGP does not believe the tool has captured a sufficient amount of conditions or has been vetted with regional hydro experts to draw conclusions about the adequacy of the Northwest system. For these reasons, we ask that you not to include any Adequacy Assessment in the Final Power Plan. If the Council does decide to publish Adequacy Assessment results in the Final Power Plan, PGP would like adequacy results from any additional scenarios published as well.