

**Northwest Power and Conservation Council  
Resource Adequacy Advisory (Technical) Committee**

**July 22, 2020**

John Fazio, NWPCC, began the meeting at 10:00am and called on Chad Madron, NWPCC, to explain the raised hand feature on Go-to-Webinar. Fazio reviewed the agenda, noting that members from other Advisory Committees are also on the call.

Fazio asked attendees to take a survey about how they use the Power Plan. He stressed that preliminary results are subject to change.

Fred Heutte, NW Energy Coalition, asked if there will not be a formal Resource Adequacy assessment this year [Slide 5.] Fazio said there would not be a formal Resource Adequacy assessment before the release of the 2021 Power Plan. Heutte then asked if there will be a formal RA assessment after the release of the 2021 Power Plan in the middle of 2021. Fazio said that since the formal Resource Adequacy assessment will be a part of the 2021 plan, the next formal assessment is expected to be finished by June of 2022. Heutte looked forward to sharing ideas for that next assessment.

Ben Fitch-Fleischmann, Northwestern, asked if there will be any sensitivities around the retirement of Colstrip 3 and 4 for 2030 or 2035, via chat. Fazio said that adequacy assessments cover a time frame from 3 to 5 years out and so a sensitivity study for years beyond that are not normally done, however, if there is sufficient interest, a sensitivity study around the retirement of Colstrip 3 and 4 could be done.

Aliza Seelig, Seattle, noted that the group has historically focused on a five-year timeline and wondered how to integrate transmission investment, suggesting a study that examines resource needs 10 years out. Fazio answered that classic GENESYS does not have the detailed topology to do that work but the redeveloped model does. John Ollis, NWPCC, agreed, adding that he would need help setting up the data.

Seelig thought this would be good to bring to the RAAC Steering Committee. Fazio agreed, adding that the SAAC would also be interested. Ollis thought this would be a big ask this time around but could perhaps do a simple sensitivity.

### **Climate Scenario Loads for the 2021 Power Plan**

#### **Dan Hua, NWPCC**

*Hua presented the new climate scenario loads for 2021 Power Plan. Hua first reviewed problems with the previous set of climate scenario loads by comparing them with observed historical loads and loads used from the 2024 Resource Adequacy Assessment. Massoud Jourabchi, NWPCC, then presented the new load methodology designed to correct the problems. Hua then concluded the presentation with the new climate scenario loads, discussing how new climate load shapes are consistent with climate temperatures.*

Hua discussed Tomás Morrissey's, PNUCC, concerns that climate peak loads are too low in winter and too high in summer [Slide 9.] Morrissey added that he was also concerned by the lack of year-to-year winter variation.

### **New Hourly Load Forecast Methodology**

#### **Massoud Jourabchi, NWPCC**

Nicholas Garcia, WPUA, asked if the model's Delta T is linear or multiplicative, worrying that a linear choice may not capture extreme loads. Jourabchi answered that it is multiplicative.

Scott Levy, Bluefish, wrote that the employment forecast from 2018 is woefully inadequate and suggested looking for something that takes COVID-19 into account. He thought waiting between Draft and Final might create too great a distortion from a realistic forecast [Slide 26.]

Jourabchi assured him that he is testing a great range of employment and has been tracking COVID-19 effects, like an increased work-from-home population. He thought it was still early to talk about the long-term effects of the pandemic, but suggested that considering the low end of the load and natural gas price forecast might be more reasonable for now.

Jim McMahon, Better Climate, asked about the temperature ranges, acknowledging the tension between the benefit of using a lot of years versus the risk that older years may not be relevant. He asked if Jourabchi plans to use the last 20-30 years as historical or go back to the 1950s. Jourabchi said this is still up for discussion but said the coefficients come from observed data. Jourabchi said the plan is to use the climate change data sets to come up with deviations and use the coefficients from actual, observed data.

Heutte voiced surprise that the low temperature was so much lower for week three on [Slide 11] than the historical record, despite the climate data showing higher, average winter load temperatures. Hua agreed, but said a particular climate model also shows very cold temperatures which will be discussed later in the presentation.

Garcia asked if the data included “frozen” public policy, pointing to Washington State policy designed for increased electrification. Jourabchi said he did include some assessment of the impacts of the Washington requirements.

### **Comparing *New Climate Scenario* with Historical Monthly-Average Loads** **Dan Hua, NWPC**

McMahon, noted via chat that the January 2022 high load on [Slide 29] appears close to the 2017 historical high load. Hua recalls that there was a lot of snow that year.

Seth Wiggins, PGE, asked via chat, if we are comparing a wider temperature envelope than we should by aggregating climate scenarios [Slide 63.] Fazio explained the thinking behind choosing the three climate scenarios.

Shauna McReynolds, PNUCC, voiced appreciation of and relief with the new load picture.

Heutte noted that climate scientists call for 13-15 years of data to see a real trend. He thought a 20-year look back and forward might be a good comparison to the 10-year data. Heutte was also interested in exploring the Pacific Decadal Oscillation. Hua thanked him for his comment.

Ollis addressed Wiggins earlier question, saying they chose 10 years of data in an attempt to create a decadal sample. He added that climate scientists advised that larger samples would be less relevant.

Wiggins clarified that his question was less about the number of years and more about the range of variabilities, calling it an apple to oranges comparison. Hua said the purpose of the plots is to see if the loads could be explained by the temperatures.

Fazio noted that the first set of slides with older loads did not react to temperature variations, but these do. Fazio agreed that this creates more uncertainty when predicting future loads.

McMahon agreed, saying [Slide 34] explains the effect. He then asked if the annual load duration curve has been plotted. Fazio said no, saying the data is available and can send a link.

Max St. Brown, Oregon PUC, asked why the duration is smaller for the aggregated climate scenarios on [Slide 49.] Hua said they are still exploring this. Jourabchi added that past loads are a combination of many different aspects of the economy while the future only looks at employment as a single driver.

Fazio added that this is for the medium economic case only, adding that including the low and high cases will increase the range of uncertainty.

Huette approved of the idea of using duration curves [Slide 76] calling it simple to do in Excel.

## **BREAK**

### **Transitioning from Historical Flows and Temperatures to Forecasted Climate Change Flows and Temperatures**

**John Fazio, NWPC**

*Fazio presented on two major topics: the first topic was on transitioning from historical flows and temperatures to forecasted climate change flows and temperatures, addressing five concerns RAAC members voiced about using Climate Change data. Concerns addressed included: Why changes in average*

*monthly flows and loads seem so large; a possible discontinuity between historic and forecasted data; how variations in forecasted flows and temperatures compare to variation in the historic data; do the 3 selected cc scenarios capture the full range of potential, future flows and temperatures; and, do the three scenarios portray an accurate representation of the distribution of flows and temperatures.*

*In the second major topic [slide 21], Fazio examined the effects of using climate change flows and climate change temperatures and loads on resource adequacy through a number of cases using the 2024 operating year resource adequacy assessment as a base and updating with climate change hydro data and climate change loads.*

McMahon asked how total annual flows from 1928-1957 and 1979-2008 compare [Slide: Climate Change Trends in Flows.] Fazio didn't have the answer and offered to calculate it for him, adding that some Climate Change scenarios have slightly more annual flow volume while others find have less. Fazio showed a working file from his computer that showed annual changes in flow volume relative to the historic record.

Heutte stated that [Slide 17] portrays temperature while the discussion is on loads. Fazio moved back to [Slide 16] explaining that these are weather-normalized loads, which are a function of normal temperature along with policy, economic conditions, HVAC equipment and more into account.

Sashwat Roy, Renewable NW, asked if sensitivities regarding regional imports/exports [Slide 22] will be considered. Fazio answered yes, referencing the LOLP heatmap which will consider in-region as well as out-of-region market supply.

Morrissey asked if RPM will also examine these sensitivities. Ollis said there will be a change-in-market-reliance scenario, but all of the sensitivities have not been fleshed out yet and welcomed input.

Garcia reiterated his desire for a study around policy, particularly on those that seek wide electrification including transportation or the removal of the Snake River Dams. Fazio said there is a Paths to Decarbonization scenario planned

which he felt would likely raise future loads due to greater electrification. He felt this might create a LOLP heat map that shows different patterns. Fazio acknowledged that flood control will change in 2024 but no one knows in what way, adding that it might stay the same depending on the agreement.

Ollis thanked Garcia for flagging these issues, adding that the 2021 Plan will try to explore as much risk as possible.

Heutte thought the time had come for the Council to grapple with the Columbia River Treaty. Fazio stated that BPA has a public document about the Lower Snake River Removal Study. He added that he can take comments to the Council about the Columbia River Treaty but stated that limited available information about possible alternatives means there is not sufficient data to for analysis.

Ollis appreciated the need to explore some of these risks in the Power Plan, stating that the redeveloped GENESYS model has the ability to look at them but pointed to time and data limitations as barriers. He urged RAAC members to keep voicing these concerns.

Levy stated that BPA's final CRSO document about the Lower Snake River dams is due July 30<sup>th</sup> and includes economic effects.

Heutte stated that [Slide 28] shows 2400MW total winter and 1100MW total summer IPP resource noting the estimated 140MW overall difference in thermal capacity. He asked if this represents 140 out of 2400 or 140 out of 1287. Fazio clarified that this includes all thermals, not just IPPS.

Fazio asked Ollis to talk about reclassified wind. Ollis referred to the Generating Resources Data Base, noting that "reclassifying" is not the best word to use and that the overall change in wind capacity includes new plants, pointing to the fair amount of solar builds. Ollis said the new wind total was the result of a careful review of what wind sites (whether in or outside the Council's footprint) were expected to serve regional loads.

Garcia asked about transmission needed to move 2100MW of new wind and 500MW of new solar. Fazio stated that most of the updated wind capacity is due to a reassessment of which wind sites serve regional loads, noting that sited and

licensed resources are counted and he hasn't addressed transmission in the past. Ollis added that most of these are existing resources, with a small amount of new wind plants.

Levy noted that [Slide 24] ties into the Case 3 sensitivity. He acknowledged that models are limited by available data but countered that they are also limited by the outdated assumption of not allowing summer imports. He said if they were allowed, the July/August issues would disappear. Fazio agreed, saying the IPP Case assumes that their full capability is available for purchase all year while the other sensitivity study adds 1200MW of out-of-region summer imports available all hours except for six late afternoon hours to account for the Duck Curve.

Levy thought it would be great if the model didn't limit imports. Fazio recalled epic RAAC battles about import assumptions, which led to the current policy. Levy countered that the model should work with data and not policy. Fazio noted that the redeveloped GENESYS has more detailed information about out-of-region resources and that this is a more appropriate topic for the SAAC. Fazio said that understanding how much market supply is available is very important but deciding how much of that supply to rely on for adequacy is actually a policy decision.

Heutte noted that utilities buying new resources require transmission access pointing to three large RFPs on the table now as example. Garcia agreed, but pointed to a fixed amount of transmission and cross-Cascades issues. He said there can be a low, regional LOLP, but a higher number in different locations. Heutte agreed.

Morrissey asked if [Slide 30] represents starting hour 17 or ending hour 17. Ollis answered that it's 5pm to 11pm.

Fazio read a question from asking how we know the IPPs are not under contract to serve load elsewhere. Ollis answered that Gillian Charles, NWPCC researches this deeply. Fazio pointed to a power supply spreadsheet on the NWPCC website.

Levy confirmed that LOLP goes down by using flat imports with the Climate Change forecasts. Fazio said yes, that's what he's showing now.

Heutte recalled that in February 2019 California imports exceeded 3000MW and questioned if that could be counted on all winter long. He said if the prices are right power will flow north and called for more exploration. He agreed that we probably can't import from California on a hot day at 7pm, but some will be available before peak, allowing for hydro storage.

He then pointed to impending RFPs which will lead to a lot of new resources coming onto the system by 2024. He said this is not accounted for in the Council's current Resource Adequacy Assessment approach. He said he will write up a proposal to add a couple of scenarios to take this into account.

Ollis said the upcoming SAAC meeting will address the WECC in general and market supply and urged interested parties to attend.

Fazio ended the meeting at 2:30.

**Attendees via Go-to-Webinar**

JP Batmale	Oregon
Glenn Blackmon	WA Dept of Commerce
Glen Booth	BPA
Frank Brown	BPA
Aaron Bush	Portland PPC
Pat Byrne	BPA
Rob Campbell	Northwestern
Rachel Clark	Tacoma Power
Mike Dalton	Montana
Richard Devlin	NWPCC
Rob Diffely	BPA
Paul Douglas	
Pete Eelkema	BPA
Ryan Egerdahl	BPA
Ben Fitch-Fleischmann	Northwestern
Karen Flynn	Idaho Power
Ryan Fulleman	Tacoma Power
James Gall	Avista
Villamor Gamponia	Seattle City Light
Nicolas Garcia	WPUDA
Sibyl Geiselman	Avangrid
Scott Gibbens	Oregon
Andrea Goodwin	NWPCC
Eric Graessley	BPA



Tom Haymaker	Clark PUD
Bob Hellrich-Dawson	FERC
Fred Heutte	NW Energy Coalition
Mike Hoffman	PNNL
Elizabeth Hossner	PSE
Daniel Hua	NWPCC
Charlie Inman	PSE
Allison Jacobs	PSE
Aaron James	NEEA
Steve Johnson	WA UTC
Massoud Jourabchi	NWPCC
Tom Kaiserski	Montana
Torsten Keiper	BP
Dan Kirschner	NWGA
Scott Levy	Bluefish
Jimmy Lindsay	PGE
Shirley Lindstrom	NWPCC
Jim Litchfield	independent
Doug Logan	
John Lyons	Avista
Caela Mandigo	FERC
Jim McMahon	Better Climate
Shauna McReynolds	PNUCC
Ian McGetrick	Idaho Power
Barbara Miller	US Army Corp of Engineers
Lorin Molander	PSE
Tomás Morrissey	PNUCC
Heather Nicholson	
Pat Oshie	NPWCC
Tom Pardee	Avista
Katie Pegan	Idaho
Stephanie Price	PSE
Kristine Raper	Idaho PUC
Andrew Rector	WA UTC
Krestine Reed	
Brian Robertson	CNGC
Selisa Rollins	BPA
Sashwat Roy	Renewable NW
John Rudolph	Seattle
Adam Schulz	ODOE
Aliza Seelig	Seattle
Marcus Sellers-Vaughn	CNGC
Max St. Brown	Oregon
Jaime Stamatson	Montana

Ronda Strauch	Seattle
Tyler Tobin	PSE
Michelle Wei	FERC
Seth Wiggins	PGE
Cindy Wright	Seattle
Zhi Chen	PSE
Brian Dekiep	NWPCC
Kate von Reis Baron	PGE
Tanya Barham	Community Energy Labs
Dhruv Bhatnagar	PNNL
John Chatburn	Idaho OER
Lee Elder	PacifiCorp
John Fazio	NWPCC
Michele Kvam	PSE
Wayne Lee	Parsons
Mike Louis	Idaho PUC
Chirs Pinney	
Kathi Scanlan	WA UTC
Max St. Brown	Oregon