Northwest Power & Conservation Council
Systems Analysis Advisory Committee
September 5, 2023

John Ollis, NWPCC, began the meeting at 1:30pm by calling for introductions. Chad Madron, NWPCC, explained how to best interact with the Go-to-Webinar platform. Ollis urged attendees to review the minutes from April 5th SAAC and suggest edits and additions if needed.

Ollis reviewed the agenda, urging members to keep an eye out as there will be more SAAC meeting coming .

Avista IRP Modeling Methodology
James Gall, Manager of Integrated Resource Planning

Eric Graessley, BPA, wondered if the only concern about Plexos was around price forecasting [Slide 6.] Gall said solve time is the biggest concern followed by the cost of buying and managing a database. He said he is leaning towards buying a price forecast as it requires less staff time.

Graessley then asked if the scope of current AURORA price forecasting is just for the Northwest or the entire WECC. Gall answered that they solve the entire WECC and pull out the MidC prices, adding that they run it 300 times, hourly.

Raphael Chabar, PSR, asked if other software was considered. Gall stated that they looked into Encompass, but Plexos was the best option.

Ollis asked Gall to talk more about model seams and the speed benefit of separating resource dispatch from capital expansion. He then asked Gall to talk about how this connects to load elasticity and load forecasting.

Gall agreed that feeding data from AURORA to PRiSM adds a speed benefit. He said they look at how much each unit runs, their market revenue, and fuel cost. Gall said AURORA allows them to assume any choice Avista makes does not impact the rest of the market. He said with the market valuation of the resource, PRiSM can look at the resource's capital cost and compare it to market opportunity. Gall said after the program looks at a resource and knows it margin, he assigns it an energy target and capacity credit for meeting peak load.

Gall addressed the load question, saying he puts in a static load forecast, minus energy efficiency, which allows the model to pick EE to reduce the load forecast. He said the LDC co-optimizer introduces a negative load opportunity.

Aaron Schwartz, RMI, asked about different constraints around the natural gas LDC co-optimization besides negative load. Gall said they have to decide how much load can be converted per year. He said other variables include a gas LDC with its own decarb goals that could choose between electrification, RNG, or a hydrogen-based resource which creates its own constraints.

Market Prices and the 2023 IRP
Garrison Marr, Snohomish PUD

Ollis noted Snohomish's blended price forecast approach and asked how they characterize risks to decision makers [Slide 14]. Marr first sketched out how the framework is created. He said they then recommend the lowest cost/lowest risk portfolio.

Nicholas Garcia, WPUDA, asked if operational parameters around storage were considered, noting that there could be lots of storage but no water behind the dam for recharging. Marr said Snohomish has a modeling sequence that includes a load resource balance in multiple simulations. He then uses machine learning models to evaluate the resources that can contribute to those issues. Marr said they then extrapolate out the capacity contribution of batteries specifically for Snohomish.

Graessley thought the region was doing and "okay" job of capturing energy characteristics for storage but thought capacity and reliability are more challenging to capture. He then asked if Garcia thought there were any operational characteristics that were most important to capture, i.e., don't draw a resource down below 10%.

Garcia admitted that he is not an expert in storage, and was hoping to learn what others are doing. He noted that there is a lot of storage in California, but the resource is not providing the hoped for capacity. This made Garcia wonder how the NW could properly account for storage as it is unlike a thermal or hydro resource.

Ollis said this will be covered in a later presentation.

Schwartz asked if Marr anticipates any challenges in "crowdsourcing" market price forecasts, for example, other utilities being reluctant to share their forecasts, in the question pane. Marr said he is fortunate that his regional colleagues make that information available.

PSE Electric Price Forecast
Regional Market Analysis in Context of the Climate Commitment Act
Tyler Tobin, Puget Sound Energy

Graessley asked if the modeling solution illustrated on [Slide 3] is specifically for Washington or the entire WECC. Tobin said this is the entire WECC as CA has a similar policy. Graessley asked what this approach means for model run time. Tobin admitted there was an increase from two days to three.

Graessley then asked how base zone prices compare to previous approaches. Tobin moved to [Slide 4] to show initial results, adding that this is still early stages.

Ollis asked how these results get summarized for decision makers. Tobin collapsed base zone and clean zone because those prices track well with abundant transmission. He said this leads him to think the modeling is accurate. Tobin thought the clean policies are getting closer to being correctly represented and stressed that this is just one model component. He noted that the portfolio capacity expansion model will look at Puget Sound Energy only.

Ollis thanked him for his input and said he will follow up with more questions offline.

BPA Approach
Eric Graessley, BPA (this presentation had no slides)

Ollis called for a discussion around calibration. Gall suggested blaming CA, saying he changed two things for CCA: including transmission charges for CA resources and addressing a double counting of CCA costs. He said these two changes brought prices much closer to actuals.

Ollis asked about adjustments to dynamic peak credits wondering which out years they test. Graessley answered that it depends on time available, saying it was 2035 but they are now looking towards 2040.

Ollis asked if Graessley is seeing challenges in the zonal transfer in the mid to late 2030s for capital expansions. Ollis noted that he is seeing challenges if there is no significant transmission expansion. Graessley said their LOLPs are more related to where the resources are going but was not sure about how much of that is due to transmission. He added that most of the issues crop up in western WA.

Marr thought that the way vector-based AURORA thinks about load excursions might not allow it to see the combinations of extreme events that could point to an incident. Because of this he doesn't use AURORA for regional resource adequacy outlooks.

Graessley asked if Snohomish's internal price forecasts include a long-term classic solution in AURORA. Marr said they do use AURORA.

Seth Wiggins, PGE, noted they see similar things. He said for their capacity expansion model their capacity contribution is a function of saturation of that resource. He said that decline doesn't happen for other like resources. He said this leads to PGE wanting to iterate every year to get new ELCCs for the next year but that would require several supercomputers. Wiggins said in lieu of that they are trying to test what they can.

BREAK

Recommendation for a New Modeling Tool
John Ollis, NWPCC

Laura Burford, BPA, asked what the plan is if the two tracks on [Slide 17] yield wildly different information. Ollis said AURORA cannot do the things OptGen does so he wouldn't expect similar answers.

Ollis asked SAAC attendees to send concerns via email if they are not comfortable talking publicly.

Scot Levy, Bluefish, wrote: "The earlier session today discussed the importance of calibration, and I'm curious to know if the Council's redeveloped GENESYS was calibrated in the manner that the panelists discussed.

I ask this because Council staff invited us to vet the model during a webinar session that lasted two or three full days, concluding on a Friday. I was then surprised to learn that Council released their Draft 2021 Power Plan the following Monday, which did not seem to be enough time to incorporate the feedback received from the days-long "vetting" webinar.

Presumably, that vetting webinar feedback was incorporated while public comments were being received on the Draft. The question here is whether or not the Excel spreadsheet input data (available on the NW Council website) was "calibrated"" in the question pane.

Ollis said that calibration work is ongoing, and an easy-to-understand spreadsheet will be available soon. Ollis said they must be mindful about how they use shared data.

Garcia had no issues with the proposed modeling solution. He then addressed analytic gaps and concerns around grid resiliency saying it relates to his earlier question about storage. He noted that people will operate their systems in the way they deem best which may be different than model predictions. Garcia asked how the Council plans to model these unpredictable variables, particularly around resiliency.

Ollis appreciated the question and offered to make it an agenda item in an upcoming committee meeting. For now, Ollis said in general the Council approach sets the mark at what could be done, agreeing that it may be aspirational due to market barriers or other issues. Ollis said resiliency is important and ripe for a bigger discussion, but the Council has tried to develop models that understand the future value of an energy product. He hoped that allows options for future studies.

Garcia said this sounds like the right path and looked forward to a half hour discussion with a larger group of stakeholders. He said his worry is people assuming that the system will operate perfectly even though that never actually happens. Ollis said this has come up internally and there are multiple staff efforts around adequacy events versus resiliency issues. Ollis said he will

follow up with Garcia, adding that many staff members and others in the region are concerned about this modeling seam.

Dor Hirsh Bar Gai, NWPCC, said planners are concerned about wildfires, multi-day extreme heat or cold events, and fuel availability. He agreed that they need to be mindful of the line between adequacy events and resiliency and welcomed ideas and suggestions.

Ollis reviewed deliverables to the Council, thanked SAAC attendees and panelists. He ended the meeting at 4:40.

Attendees in Person and Via Go-to-Webinar

John Ollis	NPWCC	Mike Hermanson	Avista Corp
Dan Hua	NWPCC	Sanjeev Joshi	CRITFC
Dor Hirsh Bar Gai	NWPCC	Alexandra Karpoff	Puget Sound Energy
Chad Madron	NWPCC	Jake Kennedy	Energy Trust of Oregon
Eric Graessley	BPA	Mary Kulas	independent
Laura Burford	BPA	Patricia Levi	Form Energy
Garrison Marr	Snohomish PUD	Scott Levy	Red Fish
Tyler Tobin	PSE	Ted Light	Lighthouse Energy
James Gall	Avista Corp	John Lyons	Avista
Meg Anderson	PGE	Ben Lyseng	BC Hydro
Brittany Andrus	WECC	Ian Mcgetrick	Idaho Power
Leann Bleakney	NWPCC	Heather Nicholson	Orcas Power & Light
Frank Brown	BPA	Joel Nightingale	WA UTC
Greg Brunkhorst	Tacoma Power	Kevin Nordt	Grant PUD
Laura Burford	BPA	Elizabeth Osborne	NWPCC
Raphael Chabar	PSR	Ricardo Perez	PSR
Katie Chamberlain	Renewable NW	Amy Pryse-Phillips	BC Hydro
Rachel Clark	Tacoma Power	Katie Rogers	WECC
Luiz Costa	PSR	Raphael Sampaio	PSR
Nathan Critchfield	Puget Sound Energy	Amanda Sargent	WECC
Sanjay De Zoysa	BC Hydro	Steven Schmitt	Northwestern
Robert Diffely	BPA	Aaron Schwartz	RMI
Caity Du	Puget Sound Energy	Jason Sierman	ODOE
Sean Ford	PPC	Steven Simmons	NWPCC
Natalie Frick	LB Labs	Kevin Smit	NWPCC
Juaquim Garcia	PSR	Alessandro Soares	PSR
Nicolas Garcia	WPUDA	Greg Steimach	OSU
Max Greene	Renewable NW	Danielle Szigeti	Tacoma Power
Lucas Guerreiro	PSR	Jim Waddell	Clallam PUD
Jared Hansen	Idaho Power	Seth Wiggins	PGE
Doug Hart	Puget Sound Energy	Brian Dekiep	NWPCC
Nora Hawkins	WA Commerce	Barbara Miller	USACE
Lori Hermanson	Avista Corp	Rafael B-Klausner	PSR

Diane Brandt	Renewable NW
Mike Frantz	Grant PUD
Elaine Hart	Moment
Pedro HQCdAlmeida	PSR
Shubhra Deb Paul	Idaho PUC
Randy Reimann	independent
Erin Riley	BPA
Blake Scherer	Benton PUD
Adam Schultz	Caiso
Joomin Yeom	BC Hydro
Brian Dombeck	BPA