Northwest Power and Conservation Council
Resource Adequacy and Systems Analysis Advisory Committees
May 30, 2024

Dor Hirsh Bar Gai, NWPCC, began the meeting at 9:30 by calling for attendance. Chad Madron, NWPCC, explained how to best interact with the Go-to-Webinar platform. Hirsh Bar Gai reviewed the day's agenda.

Draft 2029 Adequacy Assessment Results
Dor Hirsh Bar Gai, NWPCC
John Ollis, NWPCC

John Fazio, independent, noticed that the net forecast error for load minus renewables on [Slide 8] do not add up, asking why. Hirsh Bar Gai explained that they are not related, clarifying that the bigger circle represents the past methodology and the new methodology and values are represented by the smaller bubbles. He said this broader, fine-tuned approach comes from conversations with stakeholders.

Nicholas Garcia, WPUDA, wondered how seasonality in the forecast error is incorporated. He then asked if the errors are treated independently or if there is some sort of correlation between them. Hirsh Bar Gai answered that errors are treated independently. He then said there is no geographic difference, but that might be explored further. Hirsh Bar Gai cautioned that the model doesn't currently have that capability, but future enhancements for wildfire impacts could incorporate changes to renewable generation.

John Ollis, NWPCC, added that there is already a lot of seasonality for wind, but moving from day-ahead to hour-ahead used a planning level assumption that fits the broad fleet. He said forecast error is unusual for a model as it adds complexity and time, and staff plan to investigate where that effort is warranted.

James Gall, Avista, asked if these generating resources are being held in their zones or if there is an ability to trade between zones. Hirsh Bar Gai said the presented percentages do not represent actual reserves, that they are only statistical parameters, and there is a separate model component that does with reserves. Gall asked if the 6000MW are fueled or just held capacity. Ollis answered that it is fueled, giving more details on up, down, and contingency reserves.

Fazio clarified that if the old GENESYS couldn't meet the reserve requirement then there was a deficit. He asked if the new GENESYS deploys reserves. Hirsh Bar Gai said the reserves are held up to the hour ahead as needed. Ollis added that reserves are a rare, hard model constraint and will always be met even if that means dropping load.

Tyler Tobin, PSE, wondered why solar has a larger forecast error than wind. Hirsh Bar Gai said they reviewed WECC, BPA, and CAISO data for the numbers. Tobin asked if that was operational data. Hirsh Bar Gai answered yes. Ollis agreed that wind should have the higher forecast error but maybe not in the day or hour ahead.

Garcia asked if the percentages shown are the delta from expected generation. Hirsh Bar Gai answered not quite as it's the parameter that looks at the entire variability. Garcia understood that it is a statistical function, asking if will be within that parameter 95% of the time. Hirsh Bar Gai said mostly.

Fazio asked what standard market purchase volume means [Slide 9]. Ollis said this was his judgement call to extend the market reliance 25MW one way or the other to deal with model noise.

Fazio asked if they explored how the answer changes when moving the dial. Hirsh Bar Gai said it predominantly influences the frequency metric. Ollis added that the lion's share of events under 25 MW are between 0-1 MW.

Garcia thought the 25MW seemed reasonable but wondered about differences across the region. He wondered what would happen if one BA was 50MW short but together with another they added up to under 25MW. Garcia also asked about interregional transmission challenges.

Hirsh Bar Gai said they look from an interregional perspective, explaining the method. He said these are hourly summed deficits across 17 reginal busses, adding that staff can look from a BA perspective to see transmission challenges, but regional adequacy looks on the aggregate.

Garcia said he worries about intraregional transmission, particularly moving over the Cascades. He was concerned that this method may be masking some reliability challenges. Hirsh Bar Gai said the model has this capability and staff do look at the transmission results.

Ollis added that while we have the capability pinpointing the exact deficit is not easy because of unknown contractual obligations for the utility.

Glenn Blackmon, WA Dept of Commerce, wondered about the lack of increased DR between the 2027 and 2029 assessment [Slide 15]. Ollis said this was based on the 2021 Plan model results, which has different wording than analytical results. Blackmon asked if there is any data on the actual development of DR in the region. Ollis said some was incorporated but wasn't sure about updates. He offered to follow up offline.

Garcia asked what long storage on [Slide 21] means. Ollis said they use Iron-Air as the proxy, explaining the modeling strategy.

Fazio asked about import limits [Slide 22]. Ollis said they are still in the model and have not changed. Fazio pointed to more CA storage, meaning their mid-day oversupply will now go to charging batteries instead of being available for purchase. He wondered if the model shows this phenomenon. Ollis answered that it depends on the season, noting that CA needs to run their gas plants to support reserves. Ollis noted that prices have been a bit higher in the model but there are still some seasonal negative prices.

BREAK

Blackmon questioned using higher data center loads in the region as a potential scenario [Slide 24]. He wondered if it is realistic to consider how that would happen without a resource build out. Blackmon thought that most utilities would not accept a large order for new load without resource to go with it.

Ollis understood his point but noted that this is the adequacy assessment which doesn't build resources. He said this will be addressed later in the presentation and this is raising the flag of risk that will be helpful for the upcoming power planning exercise (the Ninth Plan).

Garcia pointed to Washington State's policies to reduce the use of gas [Slide 26]. He thought a significant reduction in use due to public policy would make a good scenario. Steve Simmons, NWPCC, said that will happen in the upcoming Power Plan. He said this slide includes some expected electrification, especially in new homes.

Garcia said there has been significant pressure for electrification since the 2021 Plan came out. Simmons pointed to the slide's third bullet noting the difference between an econometric forecast and an end use forecast.

Fred Heutte, NW Energy Coalition, pointed to several near wildfire misses in the last few years [Slide 27]. He called these hard-to-analyze tail risk events but thought it was a good idea to model a few possibilities from mid-July to mid-September. Hirsh Bar Gai answered that they tried to model the Bootleg fire for the 2027 assessment by taking out the AC/DC lines and the model "did not like it" resulting with infeasibilities, and therefore tested a different wildfire risk. He said staff needs a finer resolution to look at that and the new Climate and Weather Advisory Committee (CWAC) will examine this.

Heutte appreciated this effort, saying he was fearful of a big fire that would take the AC lines out for a week or more.

Blackmon thought it made sense that adding 1.6GW of new load with no new resources (data centers) would cause the region to be inadequate [Slide 32] but wondered what it takes to make it into a resource adequacy scenario as this doesn't seem very realistic. He didn't see a path for data centers to get a commitment from a load servicing entity to

provide power. Blackmon said this is different than the rapid growth of EVs as the utility has no say about that. He didn't disagree with the bright red boxes but questioned if they were in the range of realistic outcomes.

Hirsh Bar Gai clarified that staff didn't punt the other scenarios because they didn't think they were not probable, but the decision was more about timing and budget. He said it was designed to capture certain risks given the assumptions made.

Ollis continued, saying between data centers and EVs it seems like a time of high load risk. He added that the adequacy assessment is not a Plan but an early warning system, so this says, under the current Plan trajectory, loads this high would be challenging to meet.

Jennifer Light, NWPCC, pointed to the high EV forecast already embedded in the work, reassuring Blackmon that EVs are not being ignored. She said the data center forecast is uncertain, so staff wanted to check. She concluded that they are working towards the Plan and didn't want to get bogged down in this adequacy assessment.

Blackmon clarified that he wasn't suggesting staff wasn't adequately incorporating EV loads but distinguishing between EVs, that utilities are obliged to serve, and data centers that do not have an automatic right to service.

Ryan Egerdahl, BPA, stated that BPA is studying the potential of even more data center gigawatts being placed on BPA power services. He said the case is realistic because if that load came to a Bonneville utility, BPA would have to build generation for that load. Because of this, BPA takes the exposure seriously.

Joel Nightingale, WA UTC, wrote: can you speak to what the higher data center load scenario would mean in practical terms? Is this a 20% increase in average-sized data centers installed in the NW compared to the reference portfolio? Twice as many? Also, what assumptions were made about co-located generation and/or storage to help mitigate potential their impacts? In the chat.

Tomás Morrissey, NWPCC, moved to [Slide 63] and walked through the assumptions. Nightingale thanked him for his explanation.

Aliza Seelig, PNUCC, said she was trying to understand the results given the change in data centers. She asked for more discussion about magnitude and duration. Hirsh Bar Gai said that is coming up.

Seelig noted that utilities are working to solve their load growth needs, pointing to PGE joining Grid United's East to West Transmission line. She said these interconnections need to be considered as we continue to work towards clean energy goals. Seelig thought it would be beneficial to be prepared. Ollis agreed, saying the next Plan will include a more rubust look at transmission planning.

Scott Levy, Bluefish, noted that BPA must provide power to data centers, but the Power Act states that conservation is important and conservation programs have been cut down a lot. He wondered how much conservation could be put towards the high data center load. Ollis said this is on staff's radar for the next Plan.

Sibyl Geiselman, Public Generating Pool, asked about market reliance, writing: can you speak a bit to how you consider (or not) BPA being in a separate market from CAISO, PAC, and Idaho as they are presenting in their current DA market recommendation? Would that change how you would model the interaction with neighbors? in the chat.

Ollis said they don't have enough information to incorporate that into the model seams yet and are modeling on a smooth bilateral basis. He said depending on how seams discussions go it may or may not affect adequacy, but they don't know. Ollis added that BPA's process has a staff recommendation out with the same status. He said this adequacy assessment does not know the mechanisms and deserves future exploration.

LUNCH

Egerdahl asked why staff used four years and then 24 years for the reference case [Slide 32]. Hirsh Bar Gai clarified each study has 180 simulation years, and those numbers represent deficit-years (years with at least one deficit) in each study: 4 deficit-years in the reference study and 24 deficit-years in the high data center study.

Seelig confirmed if you could mitigate some issues with non-modeled emergency resources [Slide 35]. Hirsh Bar Gai explained how staff arrived at the peak threshold, saying that a study would be adequacy (from a peak VaR 97.5 perspective) if it is not expected to need more than 1,200 MW of emergency reserves more than once in 40 years.

Seelig then asked if staff dug into the relationships between the water/weather conditions that drive the deficits, as it's not load. Hirsh Bar Gai said that exploration will be shown in the next few slides.

Diffely pointed to the reference case/high data center case, asking what the difference is in total, as a percentage [Slide 44]. Hirsh Bar Gai answered that 1600 average MW is the number above the reference. Diffely called that pretty small. Hirsh Bar Gai offered to follow up with the exact averages. Ollis asked if Diffely was interested in average MW or peak. Diffely answered average MW.

Morrissey answered that the average reference case load is between 25,000 and 26,000 depending on the climate scenario so about 6% difference on peak. Ollis added that there are more data center and EV loads in the reference case. He added that staff were surprised that the reference case was adequate. Diffely was also surprised by that.

Levy noted that data centers can adjust their time of use and cool in the middle of the night. Ollis said data centers will be examined further in the next Plan. Levy shared that data centers have been reticent to share conservation information with BPA.

Garcia noted that the coldest day on [Slide 48] was a one in 10 experience, saying that the event seemed to last a long time calling that unusual. Morrissey noticed that too and referenced past years with similar temperatures but different loads and prices, probably because of shorter durations.

Levy asked for more information on [Slide 47] which shows the hydro system charging up. Morrissey said it was not a great water year, so he interpreted the dip as holding back generation in preparation for the event. Levy said it would be good to learn more as BPA lost $270 million on the trading floor even as Grand Coulee was rising.

Ollis said this phenomenon of saving hydro for peaks and hedging against risk is also seen in the model. Levy agreed, saying the poor snowpack might have operators looking all the way into summer.

Garcia said he thought “scarcity pricing” played a big role in what happened in January 2024. He said presenting information like the way it is on [Slide 52] understates financial risk to the northwest. Ollis said he did not intend to say that the shown prices would be representative of prices during an event as this is a planning model that is tuned to figure out adequacy.

Garcia clarified that he did not mean to say the model is inappropriate, but that the slide will get policy makers who may misjudge the issue. Ollis said the slide needs a big CAVEAT stamp.

Seelig agreed, saying this is why the RAAC needs to discuss market reliance limits, as utilities are planning ahead. She thought this was a good question for the committee.

Seelig then moved to new, large loads that bring their own power, wondering if they are more tolerant of risk or if it makes the situation riskier for everyone. She asked for risk characterization of this environment compared to 15 years ago.

Ollis thanked her for the comment, saying he feels keenly about market reliance versus adequacy question, especially in the winter. He added that the model has multiple stages and most of the market position is set before real time. Ollis said a lot of these market positions are guided by longer term purchases in the model.

Hirsh Bar Gai added that some adequacy multi-metric task forces around the world look at financial metrics and scarcity prices. He said staff were happy to keep talking about that here.

Hirsh Bar Gai ended the meeting at 2:30.

Attendees in-person and via Go-to-Webinar

Dor Hirsh Bar Gai	NWPCC
John Ollis	NWPCC
Tomás Morrissey	NWPCC
Dan Hua	NWPCC
Steve Simmons	NWPCC
Brian Dombeck	BPA
Pat Byrne	BPA
Ryan Egerdahl	BPA
John Fazio	independent
Aliza Seelig	PNUCC
Nicholas Garcia	WPUDA
Brittany Andrus	WECC
Glenn Blackmon	WA Dept of Com
Ian Bledsoe	Clatskanie PUD
Frank Brown	BPA
Greg Brunkhorst	Tacoma Power
Michael Brutocao	Avista Corp
Rachel Clark	Tacoma Power
Dylan D'Souza	NWPCC
Mike Dalton	Montana
Rob Diffely	BPA
Christian Douglass	NWPCC
James Gall	Avista Corp
Sibyl Geiselman	Public Gen Pool
Suzanne Grassell	Chelan PUD
Doug Hart	PSE
Josh Haver	Idaho PUC
Fred Heutte	NW Energy Coalition
Peter Jensen	NWPCC
Mary Kulas	Nuclear
Scott Levy	Bluefish
Douglas Logan	RTF CAT
Chad Madron	NWPCC
Ian McGetrick	Idaho Power
Devin Mounts	PGE
Julia Napolitano	WECC
Ahlmahz Negash	Tacoma Power
Joel Nightingale	WA UTC
Tom Pardee	Avista Corp
Craig Patterson	independent
Annika Roberts	NWPCC
Jaime Stamatson	Montana
Tyler Tobin	PSE
Joe Walderman	NWPCC
Barbara Miller	US ACE
Jason Burwen	Gridstor
Heather Nicholson	Orcas Power and Light
Blake Scherer	Benton PUD
Marcus Sellers-Vaughn	CNGC
Landon Snyder	Snohomish PUD