

Northwest Power & Conservation Council
Systems Analysis Advisory Committee
February 3, 2021

John Ollis, NWPCC, began the meeting at 9:00am. Chad Madron, NWPCC, detailed how to best interact with the Go-to-Webinar platform. Ollis reviewed the agenda and pointed to posted minutes from the January 8th and 19th, asking for comments and corrections.

Fred Heutte, NW Energy Coalition, found a small typo.

Update on Power Plan Needs Assessment

John Ollis, NWPCC

John Fazio, NWPCC

Ollis provided an update on the power plan needs assessment, beginning first with the goals from the last SAAC meeting, turning then to where the needs assessment fits within the power plan, and reviewed previous SAAC feedback on two topics—market reliance and hydro system constraints versus deficits prioritization—and staff’s consideration and methodology updates in response. Next, Ollis provided adequacy reserve margin results, concluding with high-level takeaways.

Rob Diffely, BPA, asked if the AURORA buildout is also carried into the new GENESYS [Slide 4.] Ollis answered yes, but only the buildout external to the region. Diffely asked approximately how many resources are carried in. Ollis said this will be covered later in the presentation but previewed that it’s between 400-500GW.

John Fazio, NWPCC, added that the Pacific Northwest just has existing resources. Ollis agreed, adding that planned retirements are included as well.

Heutte addressed possible future import limits [Regional Net Exports] saying the CEC offered a workshop on enhancements to natural gas turbines that some IPPs are considering. He also pointed to interest in on-site storage for gas which could

raise the amount available for imports. Heutte suggested keeping an eye on these developments.

Heutte asked about the statistical analysis that may go into things like comparing classic and redeveloped GENESYS or comparing different kinds of approaches [Slide 12.] Ollis assured him that they do look at a number of statistics but was not sure if they've done a variance analysis. Ollis then described the difficulties of comparing four-bay violations and how they lean on BPA for gut checks.

Ollis also relayed the limitations of using planning-level, and not operations-level, data. Ollis said these violations are small enough in the new GENESYS that operators can compensate.

Fazio stated that HydSim and Classic GENESYS are monthly models for specific projects so there might be hourly constraints that HydSim couldn't get to. Fazio stressed the importance of following hourly constraints.

Heutte asked if historical data is ever examined to see if it lines up. Fazio said yes, but lamented the lack of time to do statistical analysis. Ollis added that climate change data will make this more difficult. Fazio stated that operators confirm how rivers are actually operated, which he called very helpful.

Ben Fitch-Fleischmann, Northwestern, asked what drives the fall in LOLP from 2023 and 2027 [Effects of New Features on LOLP: Redeveloped GENESYS vs. Classic GENESYS.] Ollis said the rest of the presentation covers how market dynamics may cause that effect.

Fitch-Fleischmann then asked about the statement, "Forecast error is associated with deficit issues in around 40% of the simulations" wondering what potential for improvement remains. Ollis said you may not be short on an hour-ahead basis but a change in renewable generation may show up in the true-up stage.

Fitch-Fleischmann asked about the scale of forecast error, wondering if you could substitute low hydro and get the same effect. Ollis did not think so, saying the fuel source for gas and hydro is known but wind and solar is based on forecast.

Fitch-Fleischmann clarified, saying he was trying to gauge the importance of the 40% number. Ollis said a model without forecast error would predict half the outages in 2023. He added that almost all of the 2027 outages are due to forecast error and they account for 2/3rds in 2031.

Diffely asked why the LOLP is bouncing around in the new GENESYS. He wondered if the averages from the three climate change scenarios were being used and if any other metrics besides LOLP were tested.

Ollis answered that external market supply is causing the variability, adding that this will be covered in upcoming slides. He said he did use the averages from the climate change scenarios but samples from all three go into the LOLP shown, adding that other metrics were also used.

Diffely asked for clarification around "site C." Ollis replied that this will also be explained later in the presentation.

Heutte asked how the model treats forced outages from thermal and hydro. Ollis said the model treats thermal and hydro outages on an expected basis, noting that it is a bit different than the classic GENESYS and he hopes to eventually treat it stochastically.

Heutte pointed to troubles with the gas fleet not showing up in California partly because of forced outages and thermal effects. Ollis said this is a risk they would prefer to look at in a different way but had to pick and choose where to spend computational effort. Heutte agreed with the concept, adding that he wanted to challenge the thought that gas could always provide firm capacity. Heutte agreed that accounting for these deviations may make the LOLP go up.

Steve Johnson, WA UTC, referenced an earlier comment about the region rarely losing load but sometimes failing to meet the contingency reserve. Fazio clarified that the Classic GENESYS will maintain sufficient contingency reserves and will count any contingency deficit as a shortfall. Johnson asked if this points to a backup plan of thinking about using the Smart Grid to ARM load as an operational choice to get through some contingency reserve insufficiencies. Johnson conceded that this is a policy question that will come out of modeling work.

Ollis clarified that some shortfalls could be from not having enough balancing reserve or not meeting load. Ollis then said the model can test operational capabilities of different resource types.

Johnson said his thought was not directed at planning work but moving toward system operations. He said ARMing load may be an option if we see a shortage coming and he will keep a close eye on the data.

Nicholas Garcia, WPUDA, worried about forecast error associated with demand, noting that California's issues were exacerbated by DR not showing up when called upon. Garcia then commented that the 2031 LOLP includes a future demand for electricity that does not reflect efforts to electrify buildings and the transportation system. He thought the LOLP might increase because of these ongoing and active efforts and suggested looking more closely at the forecast.

Ollis said staff and Council have an eye on this, stressing that this is a baseline that includes some level of electrification. He said the Path to Decarbonization scenario will examine the risks of electrification. Fazio added that this analysis is to calculate an ARM to ensure an adequate supply.

Garcia complimented the work, calling it impressive, but asked to include more context about what is happening in the world. Ollis addressed modeling DR, saying the parameters are set by the DRAC. Fazio confirmed that demand forecasting error is also modeled. Ollis agreed.

Tomás Morrissey, PNUCC, questioned the seasonality of the adequacy need pictured on [Slide 21.] Ollis agreed that it is different than what was presented before, noting the old GENESYS missed some June issues as well. He said the model also sees some extended challenges as market buildout throughout the WECC catches up to regional retirements.

Fazio added that the modified stream flows, loads and resources are the same in both the classic and new GENESYS but the classic model has a "copper plate" on the east and west side while the redeveloped model has more fidelity into potential transmission issues. Morrissey called that a good point.

Fazio addressed Diffely's question: I thought imports were fixed per the last discussion and this analysis includes a WECC buildout, by saying the pipe size is the same but market dynamics from California and other regions is filling the pipe more often so there is more energy in the system.

Diffely asked if the most the region can import in the winter is 2500MW on a net basis [External Market -Winter.] Ollis said the limit is still 2500 but there is no easy way to exclude imports from coal so the 2500MW limit might not be as restrictive as it was in the classic GENESYS. Ollis conceded that this is a tricky way to limit the model.

Diffely then asked why the LOLP changes over time while the import limits remain the same. Ollis pointed to [External Market-Summer] to say we're importing to California, exporting to the Mountain West and Canada has charged reservoirs so they can sell back to everyone during the evening ramp.

Diffely ask if expected hydro is modeled. Ollis said the Columbia is modeled in detail but he used expected hydro for the Peace River System.

Fitch-Fleischmann clarified that a WECC-wide buildout is forecast based on regional policy goals and adequacy but we don't build out the Region for adequacy. Ollis agreed. Fitch-Fleischmann then asked if our adequacy changes because of assumptions around other regions doing a good job of meeting their adequacy and policy needs. He asked why it is okay to assume other regions will meet their policy and adequacy needs when we don't assume the same for us.

Ollis clarified that we're not assuming the region will not meet policy or adequacy goals but that this is a way to determine how much we will need to meet our needs. He then said he also would not be comfortable assuming other regions meet their needs exactly as they are represented in AURORA which is why there is a market reliance limit.

Fitch-Fleischmann thought there would be value in a bounding exercise that assumes the external market only builds to their adequacy needs. Ollis thought some planned scenario work might get at some of these issues.

Morrissey confirmed that GENESYS assumes average load throughout the west. Ollis said yes, external to the region loads are assumed to be on an expected basis. Morrissey called this a step in the right direction and agreed with Fitch-Fleischmann that some bookend sensitivities around WECC loads might be useful. Ollis said the Pathways to Decarb scenario will have a higher WECC load but stressed the difficulties in getting detailed expected loads outside the region.

Morrissey suggested looking at the last 10 years of historical loads as a shortcut solution. Ollis stressed that this is a baseline and market risks will be explored in many ways but encouraged Morrissey to send his ideas for other methods.

Garcia asked about the two charts on the bottom of [Thermal Generation looks similar in magnitude but different in usage] saying it appears that natural gas use goes way up in 2027. He was doubtful that would happen, considering the efforts to reduce gas use for electric generation. He was worried about saying a resource is available when it might not be due to policy.

Ollis said a carbon price can be put in the model and some resources, like coal, can be retired early through scenario work. Ollis again stressed that this is the baseline.

Garcia understood the importance of upcoming scenario work but was frustrated that some policy makers he works with are assuming there will be no consequences to adopting some policies.

Ollis addressed sharing access to the model, explaining the difficulties with letting stakeholders dig into the cloud-based model and said they are working on a solution. Morrissey said sharing large format output is helpful as well [Slide 36.] Ollis said he can share any output and will be putting results on line.

Fazio updated members on next steps for the RAAC, saying he can do an adequacy assessment soon and will be scheduling a meeting within the next month or so.

Ollis pointed to SAAC meeting coming about every two weeks and ended the meeting at 12:30.

Attendees via Go-to-Webinar

John Ollis	NWPCC
John Fazio	NWPCC
Chad Madron	NWPCC
Leann Bleakney	NWPCC
Frank Brown	BPA
Aaron Bush	PPC
Pat Byrne	BPA
Zhi Chen	PSE
Robert Diffely	BPA
Ben Fitch-Fleischmann	Northwestern
Ryan Fulleman	Tacoma Power
James Gall	Avista
Nicolas Garcia	WPUDA
Andrea Goodwin	NWPCC
Eric Graessley	BPA
Fred Heutte	NW Energy Coalition
Steve Johnson	WA UTC
Massoud Jourabchi	NWPCC
Tom Kaiserski	Montana
Wanda Keefer	Port of Clarkston
Shirley Lindstrom	NWPCC
James Litchfield	independent
Douglas Logan	independent
John Lyons	Avista
Lauren McCloy	NW Energy Coalition
Ian McGetrick	Idaho Power
Shauna McReynolds	PNUCC
Tomás Morrissey	PNUCC
Paul Nissley	SCL
Elizabeth Osborne	NWPCC
Patrick Oshie	NWPCC
Will Price	EWEB
Selisa Rollins	BPA
Sashwat Roy	Renewable NW
Jaime Stamatson	Montana
Ben Ulrich	EWEB

James Vanden Bos	BPA
Marissa Warren	Idaho OER
Cindy Wright	SCL
Brian Dekiep	NWPCC
Tanya Barham	Community Energy Labs
Scott Levy	Bluefish
Katie Pegan	Idaho OER
Stephanie Price	PSE
Kelli Schermehorn	Northwestern
Steven Simmons	NWPCC