

**Northwest Power and Conservation Council  
Systems Analysis Advisory Committee  
October 7, 2020**

John Ollis, NWPPCC, began the meeting at 9:00am. He directed members to the minutes from the last meeting and asked for input. Ollis reviewed the agenda. Chad Madron, NWPPCC, reviewed the best ways to engage with the Go-to-Webinar platform.

**Normalizing Temperatures with Climate Change Data**

**Ben Kujala, NWPPCC**

*Kujala presented on methodology for normalizing temperatures, noting ‘normal’ temperatures are needed and used in the econometric load model, which is used for the adequacy assessment and making hourly shapes for load data for the power plan. Kujala then walked through staff’s considerations for transitioning from the current statistical platform, Eviews, to R, making the econometric model easier to share and results more reproducible for stakeholders. Lastly Kujala walked through how we get “normal” temperatures with climate change data, stressing the next presentation on this topic will actually go into the econometric load model using the data presented during this meeting.*

**Long Term Capacity Expansion for Wholesale Price Forecast**

**John Ollis, NWPPCC**

*Ollis continued the discussion on the baseline WECC-wide buildout in Aurora and he began by reemphasizing the importance of the capital expansion outside the region explaining that power prices change based on marginal resources and with a major influx of renewables the build out really matters to get the power prices and emissions levels right. Ollis reviewed his “back-of-the-envelope” calculations presented to the Power Committee and a refresh on Resource Planning 101. Ollis then walked through the methodology changes as suggested by stakeholders and the SAAC [slide 17], additional data updates and methodology tweaks (including running tests with offshore wind and pumped storage, adjusting CA demand and tweaks to hydro modeling) [slide 21], and the latest buildout [slide 23]. Ollis also touched on what other regions are planning and how what we are planning tracks [slide 19] and potential next steps for continuing to sort the buildout, including digging into RA question, further minor methodology tweaks and resource types additions.*

Fred Heutte, NW Energy Coalition, asked whether reserve margins could change as situational awareness, like advanced weather forecasting and other things, improves [Slide 9.] He said this leads to more aggregate storage and demand flexibility and less dependence on complex fuel supply chains. Ollis agreed, saying reserve margins and risk will probably have to change as the region builds more variable energy and limited energy resources.

Heutte stated that reserve margins are not immutable over time and investments will be required. He then referred to NW Power Pool analysis that showed expanding the resource

adequacy foot print yields a 3% improvement in load diversity, adding that they are presently examining supply diversity. Ollis agreed.

Heutte pointed to Diablo Canyon, calling it a big California retirement. He referred to the impact that routine maintenance had on CAISO DAM prices as example. Ollis agreed, adding that CA has a nuclear retirement as well.

Eric Graessley, BPA, asked for impressions around having fairly low—25%-30%--peak credits for batteries [Slide 14.] He stated that he expected higher peak credits, or whatever reliability metric is used, in the planning process. Ollis said he agreed at first but buildouts were not adequate or built double the batteries. Ollis said AURORA better represents the real dynamic peak credit and 25% is just the starting point.

Scott Levy, Bluefish, wondered what would happen if some planned retirements are delayed. Ollis answered that his back-of-the-envelope numbers wouldn't change much by the end of the study. He then likened a resource retirement to deferring a need which may lead to the availability to another emerging or more efficient resource.

Heutte pointed out that gas has a semi-hidden energy limitation as most power plants don't have a firm gas supply. Ollis agreed saying they are modeled as if they are liquid in AURORA, adding that the redeveloped GENESYS also has some capability to do this.

Heutte then pointed to forced outages in the gas transportation and storage system (Aliso, CA desert pipelines, BC pipeline, Jackson Prairie) calling them a significant additional factor for resource adequacy. Ollis agreed that all resources are energy limited.

Heutte added that he didn't like the phrasing of "energy-limited resource" pointing to examples from 2014 where it was too cold to operate coal and gas resources. He said the real story is the need for diversity in replacing resources adding that there is significant capital and system risk in doing this wrong.

Sashwat Roy, Renewable NW, asked if the solar + storage is limited by ITC charge restriction or if it accounts for battery charge after five years when the ITC expires and batteries can charge from the grid. Ollis said the ITC is financially considered but the batteries are not. He said this can be done in the future but wasn't yet sure about the benefits of charging from the grid. Ollis said some of this nuance could be covered with narrative in the Plan.

Heutte noted the 270+ GW on [Slide 17] and asked if the value of EE and flexible demand chopping down system peak is being fully considering. He conceded that these resources are not unlimited but can knock down the top of the load duration curve in a very cost-effective way. Heutte again stressed that CA has a pretty good handle on this work but the rest of the west lags behind. Ollis said that's why he added regional EE potential which resulted in far fewer builds. Ollis added that he is seeing a lot more discussion on EE and demand-side

resources in recent resource plans, but said there are issues in modeling EE in AURORA. Ollis suggested addressing this in the Plan narrative.

Heutte stated that things are moving so fast for off-shore wind that it caused him to think the resource is much more viable [Slide 18.] He spoke of ongoing research that illuminated this case and wondered if it would be worth re-examining this resource. Heutte conceded that transmission remains a major constraint. Ollis agreed to an extent and explained his approach which relied on CA's SB100 analysis [Slide 20.]

Shauna McReynolds, PNUCC, asked what is being averaged on [Slide 26,] all days of winter or summer or a single day. Ollis answered that it is all the winter, fall and summer days.

McReynolds asked to follow up offline.

Heutte called the Southwest results kind of shocking, and asked if there were discussions with local utilities and other stakeholders on what they are seeing. Ollis said he looked at the utility resource plans, agreeing that it is shocking. He said part of the issue is the amount of retirements being filled in with renewables which should average out with a better price. Ollis did note the disconnect that CA and the Desert SW are becoming less adequate from a planning reserve sense while the NW, which does seem adequate, is seeing some bad price spikes.

Jeff Harris, NEEA, agreed that the difference in pricing and reserve margins across the power pools is counter-intuitive and asked if that could be because of the import/export power flows. Ollis thought it could be but thought timing could be playing a larger role.

Heutte suggested talking to WestConnect at [westconnect.com/Documents.aspx?NID=18530](http://westconnect.com/Documents.aspx?NID=18530). Ollis pointed to plans to increase transmission and the AURORA zonal topology has struggled with infeasible flows. Heutte stated that WestConnect is the area of concern and would be the best source for information. Ollis said he will follow up and illustrated other region's planning work on [Slide 19.]

### **Discussion:**

Tomás Morrissey, PNUCC, thought the build on [Slide 23] looked more reasonable, particularly in the upcoming decade. He said everyone is seeing a lot of NW resource need and suggested sharing that with the Council. Ollis reminded him that high prices may be due to modeling with a bad hydro climate change year. Morrissey agreed that with the point and wondered what would happen if the 80,000MW of batteries doesn't get built over the next 10 years. Ollis stated that CA is responsible for most of those batteries, according to the SB100 documents.

Heutte agreed with Morrissey, adding that price spikes spread at the speed of power markets...instantaneously. Heutte wondered how much AURORA reflected this. Ollis said AURORA is showing this more and more.

Ollis ended at 12:30.

**Attendees via Go-to-Webinar**

|                    |                            |
|--------------------|----------------------------|
| John Ollis         | NWPCC                      |
| Tanya Barham       | Community energy Labs      |
| Ian Bledsoe        |                            |
| Frank Brown        | BPA                        |
| Robert Diffely     | BPA                        |
| Bo Downen          | NWPCC                      |
| Karen Flynn        | Idaho Power                |
| Villamor Gamponia  | Seattle city Light         |
| Sibyl Geiselman    | Avangrid                   |
| Andrea Goodwin     | NWPCC                      |
| Eric Graessley     | BPA                        |
| Jeff Harris        | NEEA                       |
| Fred Heutte        | NW Energy Coalition        |
| Mike Hoffman       | PNNL                       |
| Charlie Inman      | Puget Sound Energy         |
| Massoud Jourabchi  | NWPCC                      |
| Scott Levy         | Bluefish                   |
| Shirley Lindstrom  | NWPCC                      |
| Jim Litchfield     | Independent                |
| Jennifer Magat     | Puget Sound Energy         |
| Shauna McReynolds  | PNUCC                      |
| Tomás Morrissey    | PNUCC                      |
| Elizabeth Osborne  | NWPCC                      |
| Patrick Oshie      | NWPCC                      |
| Sashwat Roy        | Renewable NW               |
| Bill Saporito      | Umatilla Electric          |
| Kelli Schermerhorn | Northwestern               |
| Tyler Tobin        | Puget Sound Energy         |
| Marissa Warren     | Idaho OER                  |
| Nora XU            | PGE                        |
| Brian Dekiep       | NWPCC                      |
| Jessica Aiona      | BPA                        |
| Dhruv Bhatnagar    | PNNL                       |
| John Lyons         | Avista Corp                |
| Barbara Miller     | US Army Corps of Engineers |
| Zhi Chen           | PGE                        |