

Northwest Power and Conservation Council
Systems Analysis Advisory Committee
September 29, 2020

Chad Madron, NWPCC, began the meeting at 9:00 pointing to the updated agenda. John Fazio, NWPCC, discussed conversation captured in the September 2, SAAC minutes about zero values on the ASCC table. Fazio explained that the zeros in quarter two are from an unusual coincidence in the method and not for the reasons given at the time.

Fazio then explained the correction that eliminated the zeros and provided a better estimate in all quarters.

John Ollis, NWPCC, greeted the SAAC and reviewed the agenda.

Update on 2021 Power Plan Draft Wholesale Electricity Price Forecast – Part 3

John Ollis, NWPCC

Ollis explained the continued process to generate a more reasonable WECC-wide buildout necessary for generating the power price forecast and avoided emissions rate, which will inform RPM. He reviewed the primary methodology changes and corrections implemented to adjust the buildout since the September SAAC and Council meetings.

Jim Litchfield, independent, asked what resources are included on [Slide 5.] Ollis said 37 GW of coal, gas and nuclear are represented. Litchfield suggested altering the slide to reflect that information.

Jeff Harris, NEEA, asked about the physical interpretation of the dynamic peak credit, [Slide 12] wondering if it's a demand response, TOU resource, Public Safety Power Outage or rolling blackouts. Ollis answered that the dynamic peak credit is a way to evaluate something close to an ELCC for every resource [Slide 13.] He stated that considering the top 120 hours a year gave a much more stable result than considering just the top eight hours.

Ollis thought this relates to DR and other energy-limited resources but is not meant to convey a rolling blackout. Harris said it was still confusing but sounds like a fair workaround to an internal AURORA issue.

Sashwat Roy, Renewable NW, asked for details around the chosen 120 hours, wondering if they were distributed over both summer and winter peak demand hours [Slide 13.] Ollis regretted that could not choose the exact hours but is finding the top hour, which is always an evening in July or August except in Canada.

Scott Levy, Bluefish, stated that GENESYS limits import capabilities well below what is physically possible [Slide 16] and asked if models are using a reasonable constraint. Ollis said a transport

model like AURORA uses a reasonable constraint. He continued saying classic GENESYS limited imports but AURORA represents the physical capability of the transmission lines.

Tomás Morrissey, PNUCC, liked the buildout on [Slide 17] better than the buildout on [Slide 18.] Ollis reminded him that they are both intermediate iterations and confirmed that Morrissey was saying he thought the first buildout was more reasonable. Morrissey said yes, suggesting using that buildout and creating a narrative around the [Slide 18] buildout.

Ollis stated that he is not recommending [Slide 18] but is showing it because it's the fourth iteration and is adequate. He reminded Morrissey that he can't use [Slide 17] for a price forecast because it leaves the WECC inadequate after 2025. Morrissey agreed but called [Slide 18] realistic.

Ollis explained that CA gas retirements are driving a lot of the builds. Morrissey was alarmed at the prospect of rebuilding the entire nameplate capacity of the WECC in the next five years but called it an interesting takeaway.

Fred Heutte, NW Energy Coalition, called this illuminating and a bit scary. He pointed to the difficulties of planning other regions and wondered if California's sophisticated approach around DR is reflected in the modeling. Ollis thought that California may aggressively build resource and then pointed to the four-hour battery signal, calling it highly-reflective of DR playing an important role. Ollis added that CA's EE forecast flattens their load in the next 10 years.

Heutte pointed to voluntary conservation in CA that could be put into programs to reduce peak by 10%. He admitted that it's an evolving situation and appreciated the detailed walkthrough.

Nora Xu, PGE, thought that one difference is the assumptions/projections around storage and costs. She said in PGE's WoodMac case they see about 10GW of storage by 2025 and more than 50 GW by 2044, which solves CA's adequacy issues. Ollis pointed to a run that yielded 60GW but didn't meet clean requirements and was not adequate in the out years. Ollis also noticed that batteries can't get you out of every problem and the way peak contributions are calculated is important.

Xu explained that the WoodMac battery buildout is accompanied by a huge wind and solar build and agreed with Ollis's comments. Ollis asked how big a build out she sees in the first five years and if it's comparable to what he's showing. Xu said yes, solar and solar plus batteries are very similar at the aggregate level and wind has over 12 GW. She added that WoodMac uses a combination of batteries and wondered if near-term load projections were the issue.

Xu reported that in long term the storage build is 50-60 GW, solar is over 160GW and wind is over 57GW. She was wondered if using a mix of storage makes a difference. Ollis said he's heard about longer duration batteries and agreed that proxy resources may no longer be

appropriate. Ollis thought this could be an issue for this Plan as there is a robust stakeholder process in coming up with proxy resources.

Micha Ramsey, Community Energy Labs, asked if Governor Newsom's executive order over vehicle electrification changes anything in the model. Ollis said it has not.

Eric Graessley, BPA, asked if [Slide 21] is a trillion in fixed costs on an annual basis or over 25 years. Ollis said this on an annual basis (Ollis has corrected this statement in other public forums, Council meetings and future SAAC meetings, to say that it is in fact cumulative).

BREAK

RPM Price Futures Methodology Update

John Ollis, NWPCC

Ollis presented a short review of how and what risk is assessed in the RPM. He noted the issues that negative or near-negative prices have had on the model and presented proposed updates to the methodology to solve the issues, narrowing in on potential solutions: for the dispatch fix--modify gas price distribution to the quarterly mean and develop an empirical distribution from AURORA prices, and for the price logic fix--modify interdependent factor to create a multiplier that can be used for positive or negative prices.

Litchfield called the proposed update [Slide 18] pretty significant as it sucks the inter-period uncertainty of gas prices out of the model. He thought there would be more and more negative prices in the coming years and suggested looking for answers in the new GENESYS. Ollis said they considered running the redeveloped GENESYS or AURORA several times to generate a dispatch but pointed to the huge time commitment, calling it the brute force method.

Ollis said the RPM has never nailed dispatch in the past but is close on an expected basis and the Litchfield's proposal is a good idea but too difficult from a project management point of view.

Litchfield agreed with Ollis's comment about the RPM, even though it was sold as a great risk model, and again asked about using the redesigned GENESYS as a long-term portfolio model. Ollis said they are pursuing this but after the 2021 Plan as it would add considerable delay to the timeline.

Litchfield said its staff's choice but it seems crippling to have such a fundamental underlying structural aspect of the RPM not represent the world as we know it. He concluded by saying there has never been a lawsuit around not getting a Plan out in five years and suggested taking the time needed to do a good job over a quick job.

Ollis called that fair and outlined how output will be checked in the re-developed GENESYS. He stated that if those checks show something drastic it may call for a different approach but suggested trying this option first and addressing small issues in a narrative.

Litchfield said this shows that the future we are about to see will look very different than what we have all lived through, predicting massive changes in how the power system operates and what we call reliability and costs. Ollis agreed and noted that there are not a lot of models out there that are nailing it right now.

Levey moved back to [Slide 16] calling the math puzzle interesting asking why he is not focusing on the distribution at the .50 mark. Ollis explained his reasoning, saying they will be trying a lot of different gas price lines. Levy called that a good recap of the presentation but again asked why the tight line near .50 is not used as a fixed price at one end.

Ollis said that line is reflective of the variable O&M costs on a hydro unit and explained how renewable and hydro dispatch are treated in the RPM. Ollis then explained that all of the purple represents all potential electricity prices and when gas would dispatch.

Levy suggested chatting offline and figuring out how to get rid of the left hump. Ollis said that mixture distributions have been tried but said they often don't have the same mathematical properties, so they slow down the model. Levy agreed that any solution would have to be really fast to be helpful.

Morrissey asked how the proposed fix would impact the Power Plan timeline. Ollis was not sure but thought that Option 3 could be done in a month or two. Ollis then pointed to other necessary fixes like accommodating quarterly negative prices that could also cause delays.

Ollis reviewed upcoming meetings and said he will update SAAC members as he knows more. Madron noted the upcoming the Power Committee meeting and adjourned at 12:15.

Attendees via Go to Webinar

John Ollis	NWPCC
John Fazio	NWPCC
Tanya Barham	Community Energy Labs
Dhruv Bhatnagar	PNNL
Leann Bleakney	NWPCC
Ian Bledsoe	Clatskanie PUD
Frank Brown	BPA
Aaron Bush	PPC
Rachel Clark	City of Tacoma
Robert Diffely	BPA
Villamor Gamponia	Seattle City Light
Andrea Goodwin	NWPCC
Eric Graessley	BPA
Jeff Harris	NEEA
Fred Heutte	NW Energy Coalition
Karen Heim	PPC

Charlie Inman	Puget Sound Energy
Massoud Jourabchi	NWPCC
Scott Levy	Bluefish
Shirley Lindstrom	NWPCC
Jim Litchfield	Consultant
Douglas Logan	
Jennifer Magat	PSE
Ian Mcgetrick	Idaho Power
Silvia Melchoim	PGE
Tomás Morrissey	PNUCC
Paul Nissley	Seattle City Light
Elizabeth Osborne	NWPCC
Patrick Oshie	NWPCC
Sashwat Roy	Renewable NW
Kathi Scanlan	WA UTC
Zeecha Van Hoose	Clark PUD
Veronika Vazhnik	Idaho
Saul Vallarreal	SCL
Marissa Warren	Idaho
Nora Xu	PGE
Brian Dekiep	NWPCC
Barbara Miller	USACE
Will Price	EWEB
Karen Flynn	Idaho Power
Shauna McReynolds	PNUCC
Kelli Schermerhorn	Northwestern
Aliza Seelig	SCL
Cindy Wright	SCL
Zhi Chen	PSE