

Northwest Power & Conservation Council
Systems Analysis Advisory Committee
March 31, 2021

John Ollis, NWPCC, began the meeting at 9:00. Chad Madron, NWPCC, reviewed the best way to interact with the Go-To-Webinar platform. Ollis asked that any comments or corrections to the March 17 minutes be emailed to him and reviewed the day's agenda.

2021 Power Plan Needs Assessment Update: Modification to the Adequacy Reserve Margin Calculation

John Ollis, NWPCC

Ollis explained that results from this modification have already been presented to the Council but called this a time to discuss the methodology in detail. He reviewed the standing methodology and described the small tweak to where the definition of peak and average load has been changed.

Questions:

Craig Patterson, independent, stated that the last year presented very serious societal changes due to COVID-19 and the wildfires. He asked how those changes were incorporated into the model. Ollis agreed that the last year was challenging and said some risks could flow into the model through the Adequacy Reserve Margin as more obligations to the system. Ollis said COVID-19 is treated like a load excursion, explaining that it's hard to line up exactly.

Ollis said that wildfires have both known and unknown risks which make them hard to model quantitatively. He thought they would, however, be explored in the narrative.

Patterson argued that thousands of homes are gone due to wildfire and the economy is imploding because of COVID-19. He called it important to look at the trends before and through these events as they will be revealing.

Fred Heutte, NW Energy Coalition, asked what the difference is between the proposed and current methodology. Ollis said the math remains the same but the definitions of peak and average load have changed. He said the ARM is now calculated from the maximum loads from the RPM instead of the average.

Baseline Conditions

Ben Kujala, NWPCC

Kujala reviewed high level themes, what a baseline is and is not. He reviewed what a scenario is, how it is created and used. Kujala showed model results.

Questions:

Elaine Hart, Moment Energy Insights, confirmed that the Northwest's Resource Adequacy needs really matter on a high-level for resources that offer capacity like EE and DR. She said if the region does not have a Resource Adequacy problem these resources are valued lower and

selected fewer times. Kujala agreed, adding that the cost of carbon also plays into the picture. He said EE never goes to 0 even if you take the capacity signal away.

Hart was concerned by how the capacity expansion in AURORA feeds into GENESYS, wondering if the Resource Adequacy signal is being artificially depressed. She worried that this could create a circular situation where it looks like the West solves its Resource Adequacy problem so the Pacific Northwest doesn't need to do anything. To avoid missing something important, Hart suggested looking at a run of inadequate systems. She acknowledged that this is a more conservative approach.

Kujala said he has a presentation on that idea to be shown later. Ollis added that understanding market buildouts is a big risk. Kujala cautioned that an inadequate market does not mean a lot of solar will not be built, meaning that challenges will remain.

Hart agreed that resource challenges in the middle of a solar glut are probably not reality and was glad that this is on the staff's radar.

Jim Waddell, independent, asked how the BPA interconnect and transition queue is being modeled and incorporated. Kujala said that IRPs show huge plans inside the region along with more outside the region. Waddell confirmed that the 6 GW are inside the region. Kujala confirmed, adding that 150 GW of mostly solar is planned for the WECC.

Patterson stated that rates have been going up while the economy has consistently faltered, particularly in rural areas. He said this has affected utility business models. Patterson said the ground up perspective is missing in the model, along with any lessons learned from the recent energy crisis in Texas. Kujala emphasized that policy makers look at model outputs specifically to give consideration and perspective to issues like that.

Tomás Morrissey, PNUCC, said a SB100 report just came out with CA projections of 50 GW of new resource by 2030 and wondered if that represented in the baseline. Ollis said he works with the CEC and tracked their analysis. He said CA relies on some out-of-state resource and the Northwest actually has a higher amount. Morrissey asked how much higher. Ollis said the 2045 numbers are higher, 210 GW versus 180 GW, partially because the model does not have the fidelity to model distributed solar.

Morrissey asked about the 2030 number. Ollis said it is a lot higher with a steeper ramp. Ollis added that he shared the buildout with the CEC. and they did not think it was unreasonable. Kujala added that the baseline uses critical water in a climate change world and CA has no insight into this. Ollis agreed, saying that average water changes the resource build by 30 to 40 GW.

Heutte confirmed that the updated ARM approach still results in a large renewable build with a lot of curtailment, the same low EE build, the same lack of gas, DR and storage. Kujala answered yes, saying these resources respond to adequacy need and that need is much smaller. Heutte

called this a significant change in the analysis. He thought the most substantial shift was the in-region analysis and was surprised by the outcome. Ollis said the needs coming out of GENESYS are the same but they were not being translated to the RPM correctly.

Heutte noted that there has been concern about the market pricing in AURORA versus RPM and now there is exploration of the alignment between GENESYS and RPM on the resource margin. He called this both appropriate and surprising. Kujala clarified that GENESYS has much more information, including a fuller picture of the hydro system than the RPM.

Scott Levy, Bluefish, suggested testing two sets of batteries, one for afternoon dispatch and the other for morning ramp, for the reference plant to get different results. Ollis said he doesn't delineate between morning and afternoon and lets the model decide. He said the models are capturing the needs for morning, evening or both morning and evening.

Levy said if economics are driving use there are not a lot of forces that would make a battery save resource for the morning, but policy might. Kujala said there will be more talk about reserves later in the presentation that will help add perspective.

Early Coal Retirement Scenario AURORA Results—Revised

Referencing a presentation sent out on March 19, Ollis recalled that the early buildout had issues due to AURORA's inability to deal with a 1 5GW drop in resource in one year. He presented a summary of the revised results.

Heutte weighed in on the proxy resource issue, saying right now it is the Small Modular Reactor while he thinks it should be offshore wind. He said both could be in operation in a decade but argued that one company is self-certifying the cost and performance of SMRs. He also noted that there is not a lot known about SMRs but there is about offshore wind. Heutte thought that offshore wind will have a lower cost and that could have some bearing on the analysis.

Ollis understood his concerns but said they were looking at a "kitchen sink" approach considering how much baseload resource was being retired at once. He said they are modeling offshore wind due to CEC guidance and it is being picked up. Ollis said he is looking for high-level narratives around prices for RPM, emissions rates and market supply for GENESYS.

Morrissey asked if there are any RPM takeaways yet [Slide 23.] Ollis said not yet but offered to send out information when it is available.

Explorations on Reserve Requirements and Provision in Future Power System

Ollis reviewed current reserve treatments in the models, explained how reserves fit into defining system needs and looked at the cost and impact of building more resources versus holding more reserves on the existing system.

Increased Market Reliance RPM Results

Ollis and Kujala presented results that show regional needs eliminated due to adequacy, a decrease in residential bills, a decrease in the no penalty NPV and substantial changes in DR and thermal resource builds.

Preliminary Results: Organized/Limited Markets Scenario

Ollis addressed concerns about lingering risk of external markets and AURORA buildouts. He said he will discuss methodological approaches for energy and capacity markets in this scenario. He shared buildouts from AURORA for an organized market, limited market that ignores reserve margins and no gas build limitations.

Hart addressed the first five years of [Slide Limited Market (No PRM)] asking how confident staff is about the build. She said she was thinking more in context of what is being sent to GENESYS versus the RPM as that risk is a bit different. Hart said when trying to test the market value of resources, you should try to err on the side of overbuilding but testing for resource adequacy asks that you err on the side of underbuilding.

Ollis explained the goal is to take a number of different looks at Resource Adequacy. He said the fundamentals of an oversupplied market are a major risk in this case. Ollis asked if this is conservative enough but cautioned that resource plans have been deferred while policies have changed. He said he could reflect CA and Arizona's plans but other regions have ongoing resource plans. Ollis reiterated that the issue is not just planning reserve margins but policy and wondered what happens if the build out doesn't meet policy.

Kujala said this would do less in AURORA than most utility IRPs. He said taking storage off the top would be below the IRPs in the near term. Ollis agreed. Hart thought it would still be helpful to show, particularly if there are not a lot of plans or procurement underway. Kujala thought the IRPs are higher on the solar side and offered to look. However, he did not think the same for battery and wondered if that was a concern.

Hart argued that batteries might be mitigating Resource Adequacy challenges around sunsets and the signal could be missing. Ollis offered to refresh the IRPs and take another look.

Morrissey said he didn't sum up all western IRPs but called this close, about 120,000 MW of resource by 2030. He said the CA report shows 29,000 MW of solar, half of which is distributed. Morrissey thought it would be fun to see more data. He called this a good start and wondered if GENESYS would be run according to western conditions, i.e., limiting the inertia capability.

Ollis said the plan is to take some limited market capability all the way through GENESYS. He added that there have been attempts to go through some market fundamentals in the past i.e., a bad water year or lower gas generation from the SW and found that the results were not significantly different. He pointed to market diversity between the Northwest and the rest of the West that covers over early adequacy issues. Ollis concluded by saying this seems like the bigger uncertainty.

Morrissey thought this was a more realistic buildout than the baseline and was interested in stress testing it. Ollis agreed but wondered how to test it. Morrissey thought higher temperatures would work. Ollis said they tested the supply side because there isn't great intel on a higher CA load forecast. Ollis asked for a temperature range or some other background, adding that he could test for a bad hydro year. Morrissey offered to pull some data together.

Patterson thought it would be valuable to see historical trends [Slide Organized Market (preliminary results)] saying without it there is no foundation. Ollis agreed there is value in looking to the past but said that he is seeing bigger builds than ever before. Ollis added that this includes climate change data that has been vetted and explored, and a considerable drop in the fixed cost of renewables. Because of this, Ollis was unsure about the value of looking at the historical past and asked for further guidance.

Patterson said if we don't learn from the past, we are condemned to repeat it. He noted that, in the past, many co-operatives went 30 years without a rate increase and it wasn't until the projected shortfalls of the 1970s that rates began to climb. Patterson thought the region is finding itself in the same place and there are externalities, unknowns and unintended consequences yet to be explored. Ollis did not disagree and asked for a list of externalities that they can possibly explore via modeling or narrative.

Levy readdressed his earlier question about separating battery into morning and evening need [Slide: No Gas Build Limitations.] He asked if pump storage is treated the same as battery. Ollis said pump storage is limited by geology and based on actual projects. He added that pumped storage has more hours of storage and are varied.

Levy thought it might still be useful to separate the batteries. Ollis argued that letting the model decide is a similar approach, as batteries go to price differential, particularly in the evening. He said the model implicitly does this and pre-assigning a time might hurt batteries' prospects.

Levy said he understood the model pulls on economics but wondered about the effects of policy that asks for a morning reserve. Ollis noted AURORA's balancing and contingency reserve requirements but incorporating additional reserve would need more discussion offline.

Ollis asked that further comment be sent to him in the next few days as time is winding down. He ended the meeting at 12:40.

Attendees via Go-To-Webinar

John Ollis	NWPCC
Chad Madron	NWPCC
Tanya Barham	Community Energy Labs
Jonathan Belias	NEEA
Leann Bleakney	NWPCC
Frank Brown	BPA

Aaron Bush	PC
Zhi Chen	PSE
Rachel Clark	Tacoma Power
Robert Diffely	BPA
Ben Fitch-Fleischmann	Northwestern
Sibyl Geiselman	Avangrid
Andrea Goodwin	NWPCC
Eric Graessley	BPA
Jared Hansen	Idaho Power
Elaine Hart	Moment Energy Insights
Fred Heutte	NW Energy Coalition
Steve Johnson	WA UTC
Torsten Keiper	BPA
Scott Levy	Bluefish
Shirley Lindstrom	NWPCC
John Lyons	Avista
Shauna McReynolds	PNUCC
Tomás Morrissey	PNUCC
Paul Nissley	SCL
Elizabeth Osborne	NWPCC
Patrick Oshie	NWPCC
Craig Patterson	independent
Will Price	EWEB
Selisa Rollins	BPA
Sashwat Roy	Renewable NW
Kathi Scanlan	WA UTC
Ben Ulrich	EWEB
Jim Waddell	independent
Marissa Warren	Idaho OER
Cindy Wright	SCL
Jim Yost	NWPCC
Barbara Miller	US ACE
Ahlmahz Negash	Tacoma Power
Kelli Schermerhorn	Northwestern
Doug Grob	NWPCC
Tom Haymaker	Clark PUD