

Northwest Power and Conservation Council
Resource Adequacy Advisory Committee/Systems Analysis Advisory Committee
May 6, 2020

John Ollis, NWPCC, began the meeting at 9:30 with introductions, a look at the agenda and the Power Plan timeline.

Modeling Climate Scenario Wind Generation

Daniel Hua, NWPCC

John Fazio, NWPCC, noted that staff is using a different downscaling method than MACA [Slide 18] and asked for comments on how different or similar the methods may be. Hua believed that wind speed and direction are the most important parameters for wind generation. He stated that MACA does not include wind speed while the University of Idaho data does. Hua stated that the two methods are actually quite close when measuring temperature.

Nicholas Garcia, WPUA, noted that the information on [Slide 20] assumes the ground is perfectly flat. He asked how Hua planned to take topography into account. Hua said that will be discussed in upcoming slides.

Rob Diffely, BPA, asked if there were any comparisons back to actuals [Slide 31.] Hua explained that this is 100-meter wind speed and the synthetic NREL data is the only set available for comparison. Ollis added via chat that staff has compared the NREL synthetic data to actual historic data with some adjustments for turbine differences in the Gorge in the past and the NREL data seemed reasonable. Ollis stated that the variety of turbine vintages and hub heights makes the comparison difficult. Diffely agreed to work on this further offline.

Garcia confirmed that [Slide 36] was a comparison over one year. Hua said no, explaining that this is 30 years in the future calculated with six years of NREL wind speed data. Garcia asked about breaking down the seasonality of wind. Hua said he plans to do that work after the Advisory Committee agrees that the overall distribution looks correct.

Fazio suggested using a delta from the average as an alternate method [Slide 39.] Hua countered that if the climate average speed is below the NREL speed you may get negative numbers. Fazio agreed.

Morrissey asked if [Slide 47] indicates that Gorge wind and Montana wind have similar capacity factors adding that it seems counterintuitive. Hua asked if he expected Gorge wind to have lower capacity factors. Hua then reported that the wind turbine used in the SAM program is a good model. Ollis stated that Gorge and MT capacity factors are skewed by the older, lower and less efficient turbines in the Gorge, adding that the Gorge is still a good site because of seasonality. Ollis said this may mean that they both look good for capacity on an annual basis.

Morrissey understood but was not completely convinced. Ollis admitted that Staff is reviewing this as it seems counterintuitive but stated that it's hard to compare historical generation to new generation as it's not apples to apples.

Silvia Melchiorri, ANECO, LLC, stated via chat that Gorge wind capacity factors are indeed much higher than what empirical evidence suggests and thought this would be worth following up on.

Garcia noted that the power curve drops at 20 meters per second and wondered why the average and median numbers are not closer. Hua moved to [Slide 35] saying they are close but the steeply rising power curve stretches out small differences in wind speed. Garcia asked if this means there will be more hours at zero because they're above the max speed. Hua said yes but there will also be lots of hours below the cutoff speed. Garcia said this should drive the mean and median together but they still look far apart. Hua said he will think on this further.

Greg Cullen, Energy Northwest, asked how to get to a seasonal capacity factor. Hua said he is first seeking agreement on the methodology before moving from annual to seasonal. Ollis promised to talk about seasonality later in the day and was also shocked by these initial results and promised to keep digging. Ollis assured the room that there are seasonality differences between wind resources that need to be explored.

Hua thought the minimization method will make for a better fit. Cullen thought the capacity factors for A, C, and G on [Slide 47] look more like what he sees for SE Washington wind than the N column. Cullen thought it would be better to understand the empirical data we have instead of trying to get up to the NREL numbers. Hua thanked him, said he will try both methods and present them to the Committee.

Morrissey suggested looking at the 2021 reference plants build by the GRAC. Hua agreed to run a few if it wasn't too difficult but said he is continuing work started by Mike Starrett before he left the Council. Ollis added that these sites were picked because they represent both the existing and new resources.

Travis Douville, PNNL, asked why Montana wind was chosen and why Wyoming wind wasn't included. Ollis answered that they seemed similar and project management demanded limiting the number of resources to model. Ollis stated that they are always looking for more historical information but NREL is a public data set that allows staff to look at new wind resources.

Phillip Popoff, PSE, asked if the correlation between wind and temperature would be discussed. Hua stated that wind speed and temperature are produced by the same GCM and are therefore already correlated by design. Popoff stated that the seasonal or annual capacity factors don't matter much for adequacy and he is more interested what wind looks like during times of high load. Hua stated that he is looking for agreement on overall distribution before he moves down to finer characteristics.

Ollis agreed that hourly wind shape is important to GENESYS and AURORA and it will require some work to choose the best way to transmit that message to the RPM. He added that this will be discussed in the afternoon session.

Popoff called the presented changes massive and felt anxious about the lower-than-usual level of review with the RACC technical and steering teams. He asked what BPA's role has been in this process and how the new data streams will be incorporated in the model. Ollis agreed that staff has incrementally presented a lot of new climate change data. Ollis admitted that this has been challenging and accommodating stay-at-home orders has made the process even harder.

Fazio agreed that Popoff was asking the right questions, noting that the Council has never shied away from pushing the envelope. Fazio stated that incorporating climate change data and redeveloping the GENESYS model is no different, but agreed that the changes are dramatic and require a lot of thinking and review.

Fazio stated that there will be a RAAC steering committee meeting in late June and a technical committee meeting a few weeks later. Popoff asked if the schedule leaves any time to modify methodologies if need be. Fazio answered that the methodology is being developed and there will be time between the Draft and Final Plan. Popoff said he is less concerned with the Power Plan and more focused on adequacy. He asked if there will be time to address any issues the technical committee finds before they get folded into the Draft.

Fazio asked how important it is to get a Resource Adequacy assessment out before February 2021. Popoff noted that PSE is tightly linked to GENESYS output meaning that RFPs will be outdated. Ollis agreed that there's a difference between the Adequacy report and the Power Plan and they aim for consistency. Ollis wasn't sure if there was time to change things before the Draft but stressed that even substantial changes can be made before the Final.

Steve Johnson, WA UTC, noted the Council's obligations and timelines and stated that everyone in the region hopes that climate change data can be reflected in that work. He wanted to then delineate that responsibility from any IOUs' obligation to do their own work independently from the Council. Johnson agreed it would be easier if everyone was on the same schedule but thought that IOUs could do this work on their own if need be.

Fazio agreed that the RMJOC data shows some big shifts in flows and loads, saying this is why we need to examine this thoroughly in the upcoming RAAC meetings.

RAAC/SAAC Resource Adequacy Assessments using Climate Change Data, Calculating Adequacy Reserve Margins

Popoff asked where the other flows would fall on [Slide: Comparison of Average Monthly Loads.] Fazio answered that they would fall between A, C, and G.

Garcia asked if overall generation will be higher or lower over the year [Slide: Difference in Average Hydro Generation (1st 10 CC Years)] Fazio answered that the three cases show a slightly higher volume of water that might lead to more generation but said it's still hard to tell because of spill requirements.

Popoff asked how the statistics were calculated for CanESM1 (A) [Slide: 2024 RA Assessment with CC Data (2020-29)] Fazio first reviewed how the 12.8% was calculated for the 2024 Reference Case LOLP then said he used ten years of modified flows with their associated temperatures and changed other variables like forced outage rates, wind and solar patterns. Fazio said bias correcting for wind may have an effect.

Popoff stated that this is not nearly the same number of samples run in the past and asked why they were run in one big game. Fazio reminded him that the temperature and water are already correlated so it would be wrong to break them apart. Fazio then said they didn't run all thirty years of data because the RMJOC shows that each decade will have a higher temperature increase and that effect will bias results higher.

Morrissey agreed that temperature and hydro are correlated and asked what has changed. Fazio stated that the modified stream flows were calculated using the daily temperature forecast. Fazio said historically he looked at monthly temperature and flow which revealed no correlation.

Garcia asked if Demand Response was included in the efficiency numbers. Fazio said DR is treated explicitly inside the model.

Jim Litchfield, independent, asked how the climate change data took historical hydro variability into account. Fazio said they chose three scenarios, which equals thirty years, to better simulate that variability. Litchfield said one of the Council's hallmarks is explicitly factoring uncertainty into the Power Plan and was unsure that three scenarios would capture the usual range of water conditions that drive LOLP analysis.

Fazio offered to provide a chart that showed the spread compared to the historical record. Morrissey said, via chat, that it would be useful to see that. Litchfield agreed, adding that everything he's seen on climate data predicts massive effects decades in the future but (A) and (C) are showing it right now. Fazio admitted that he was also shocked by this data, adding that a resource adequacy assessment using just the last 30 years of data show an inching up of LOLP and shift towards summer.

Hua reminded the committee that these three scenarios were chosen because they represent the extremes. Litchfield understood the selection, but noted that the scatter plots looked similar to historical generation. Fazio said there's a need to be skeptical and dig deeper into the results.

Fred Heutte, NW Energy Coalition, thought the data was really saying to expect more climate variability going forward and might require a shift when talking about a climate-informed baseline. He agreed that these startling results need to be taken seriously and thought the group should exercise caution when talking about what they represent.

Heutte was troubled by the differences in the available data. Fazio recalled seeing a similar, but smaller magnitude, shift when doing a 2035 resource adequacy assessment two years ago without the RMJOC data. Fazio agreed these results require more investigation.

Heutte confirmed that this doesn't include any potential Demand Response and then asked to hear more about limiting IPP availability in the summer [Assumptions for Future RA Assessments.] Ollis said this resource wasn't available at all in the past particularly during summer evening ramps. Heutte thought that hybrid resources will be a game changer and suggested watching that closely.

Fazio added that California could outbid the Northwest if they see a dire afternoon need. Heutte agreed, but wondered if CA could shift some of their noon resource to make evening resource available.

Heutte asked if the Plan "will" or "can" include a Resource Adequacy Assessment [Slide: Next Resource Adequacy Assessment.] Fazio stated that it will.

Garcia asked about existing wind and solar on [Slide: ARMc (Capacity)] wondered if the numbers were average generation over peak and how a thermal inversion or high cloud cover would affect them. Fazio stated that he didn't use the ASCC value here because that metric is for new resources. Ollis added that the ARMc is a way to connect GENESYS to the RPM and will discuss the topic further in the afternoon session.

LUNCH

New and Existing Resources in the Council Models

John Ollis, NWPCC

Scott Levy, Bluefish, noted that some wind contracts will expire and asked if this resource will be modeled [Slide 5.] Ollis answered that historically staff have not but offered to think about how to model it as an existing resource tranche. Levy called wind the opposite of a coal retirement in that it will come back to the Northwest. Ollis said he could use the retirement multiplier. Gillian Charles, NWPCC, pointed to the overarching assumption that a resource will continue to serve its load even if its contract expires during the Plan's 20 years.

Fazio asked if peak hours start at 6pm and end at 10pm [Slide 13.] Ollis answered yes, this is for four hours.

Coal Retirement Scenario—the Details

Gillian Charles, NWPCC

Heutte asked about the 2022 Early Retirement Scenario for Jim Bridger 1 on [Slide 5.] Charles thought the date might have been more fluid when the graph was created. Ollis added that this was the earliest date on the vintage range found on some IRPs. Heutte offered to check the PacifiCorp IRP. Max Greene, Renewable NW, stated that PacifiCorp's IRP says "coal unit retirements scheduled under the preferred portfolio include: 2023 for Jim Bridger Unit 1, via chat. He added that this is instead of the 2028 in their 2017 IRP.

Interpreting Existing Policies

Gillian Charles, NWPPC

Glenn Blackmon, WA Dept of Commerce, wondered how staff would approach a situation where a utility doesn't meet their 100% greenhouse gas neutral target [Slide 8.] Charles stated that Council staff has taken level of achievement into account in the past, recalling that a 95% achievement rate was assumed for the Sixth Plan. She stated that they are now assuming a 100% achievement rate for CETA but that is open for discussion.

Ollis agreed, saying there are REC provisions. Ollis also added that there's a price in the model for violating constraints but early runs show an abundance of clean energy. Blackmon stated that the cost provision is one element of uncertainty before saying that the 2030 standard says that up to 20% of electricity could still be fossil fuels as long as it's offset by other reductions. Blackmon said that would most likely occur outside of the electricity sector.

Charles said the 2030 goal of 80% is incorporated along with the 2045 goal of 100%. Ollis agreed but said there are still open questions.

Garcia voiced surprise about Ollis's earlier statement that the region has enough renewables to meet the 2045 standard. Ollis said yes, if viewed from a regional perspective.

Nora Xu, PGE, commented that the CETA bill does not say you will be free of all fossil fuels but your retail sales—after losses—will be. Ollis agreed with her interpretation.

Garcia asked how firm the policies or goals have to be before they are included [Slide 12.] Charles answered that utility IRPs or public statements are treated as firm but staff knows they could change, adding that historically they became tighter. Garcia agreed, but voiced concern about entering a recession and how that might change the picture. Charles countered that it's still too soon to know and PacifiCorp is not changing their schedule.

Ollis noted that the momentum until February was towards more clean and renewable options but acknowledged that we are in the early stages of a fast-changing situation and the SAAC can always modify goals to a percentage of achievement.

Ollis ended the meeting at 4:00

Attendees via Webinar

Aaron Bush

PPC

Adam Schultz	ODOE
Ahlmahz Negash	Tacoma Power
Alyssa Tavares	
Andrea Goodwin	NWPCC
Barbara Miller	Oregon
Dhruv Bhatnagar	PNNL
Glenn Blackmon	WA Dept of Commerce
Bryan Neff	CEC
Patricia Byrne	BPA
Thomas Chisholm	US Army Corps of Engineers
Cindy Wright	Seattle City Light
Dan Hua	NWPCC
Dave LeVee	Pwercast
Doug Logan	Columbia REA
Elizabeth Osborne	NWPCC
Frank Brown	BPA
Fred Heutte	NW Energy Coalition
Garrison Marr	Snohomish PUD
Gillian Charles	NWPCC
Eric Graessley	BPA
Greg Cullen	Energy Northwest
Greg Nothstein	WA Dept of Commerce
Hazel Aragon	CEC
James Gall	Avista
James Vanden Bos	BPA
Jim Litchfield	independent
John Fazio	NWPCC
John Lyons	Avista Corp
John Ollis	NWPCC
Tom Kaiserski	Montana Energy Office
Kathi Scanlan	WA UTC
Ian Bledsoe	Clatskanie PUD
Leann Bleakney	NWPCC
Jennifer Magat	Puget Sound Energy
Max Greene	Renewables NW
Ian McGetrick	Idaho Power
Mike Hoffman	PNNL
Nicolas Garcia	WPUDA
Nora Xu	PGE
Pat Oshie	NWPCC
Phillip Popoff	Puget Sound energy
Rob Diffely	BPA
Scott Levy	Redfish Bluefish
Selisa Rollins	BPA

Shauna McReynolds	PNUCC
Shirley Lindstrom	NWPCC
Silvia Melchiorri	ANECO, LLC
Steve Johnson	WA UTC
Tanya Barham	Community Energy Labs
Tomás Morrissey	PNUCC
Torsten Kieper	BPA
Travis Douville	PNNL
Villamor Gamponia	Seattle City Light
Zhi Chen	PSE
Brian Dekiep	NWPCC