

**Northwest Power and Conservation Council
Generating Resources Advisory Committee
March 4, 2020**

Gillian Charles, NWPCC, began the meeting at 9:30 with a call for introductions and a review of the agenda.

Nate Sandvig, National Grid, asked about the upcoming zero-carbon resource reference plant [Slide 7.] Charles said this will be developed from the emerging tech resources and will be discussed in detail at the next meeting.

Rick Williams, Portland State University, asked if there will be any discussion about pre-emptive power shut offs today. Charles answered no, but offered to pass the information to Ben Kujala, NPWCC, and get back to him.

Regarding the staff proposal to use a frame as a proxy for a gas peaker resource, Fred Heutte, NW Energy Coalition, agreed that the frame's 50MW/minute ramp rate and the minimum run rate of reciprocating engines would probably not affect Council modeling that much [Slide 13] but worried that the model will pick frames over more expensive demand response. Charles asked for utility feedback on that comment, adding that the model takes more than resource cost into account, pointing to clean energy standards and RPS as examples.

Charlie Black, CJB Energy Economics, added that modeling will reflect the cost of carbon when dispatching frames. He said California's Cap and Trade program is maturing, putting the current economic cost for dispatching gas-fired CTs at \$9 MWh. He asked how the Council will model power prices, especially under other Cap and Trade programs.

Charles noted that an earlier, WECC-wide electricity price forecast that took WA CETA and other state policies into account was presented to the Council in November 2019. She added that the social cost of carbon will be assigned after model runs for better comparison.

Black recalled that the November presentation was based on the social cost of carbon but a prescriptive regulatory approach like CETA requires more work. He said California's Cap and Trade program is already impacting electricity spot market prices. Charles said that earlier modeling was a best attempt to reflect the latest policies and staff continues to work on improvements including developing more representative clean policy at the state level by aggregating utility and municipality clean energy goals.

Heutte stated that his comments and concerns are around the estimated costs of frames, calling it a sensitive input for the Plan. Charles agreed that changing from the frame technology to another as the proxy would cause the price to go up (frame is by far the cheapest of the gas peakers). She said selection of the 7HA.02 came after looking at considerations in utility IRPs and proposed leaving it as is right now and possibly re-evaluating after some model runs.

Heutte commented that there's no utility in the region, aside from NorthWestern Energy, that has a public statement about wanting to build new gas. He realized that this may change and wanted the model to reflect the best available data.

Black posed a question around [Slide 25.] He imagined modeling a BA with peak load of 5000MW, transmission export capacity of 1000MW and 6000MW of capacity. He wondered how much additional new resource would be allowed. Charles said long-term firm contracts would not be taken into account, just the physical capacity of the transmission system.

Black then asked about allowing new resources in that BA which would now result in more generation than peak load and export capacity. He asked if the models would identify incumbent resources or curtail new resources. Charles answered that she doesn't have all the modeling details but there are curtailment penalties to safeguard against overbuilding. Charles then assured Black that any surprising model results will be investigated.

Black said this seems sensible but was interested in the details. Charles said she will discuss this with John Ollis, NWPCC, as a topic for a future SAAC meeting to bring in the modeling implications of the maximum build-out strategy.

Heutte strongly endorsed this approach. He then moved to [Slide 23,] asking if the bubble diagram will be the one used. Charles said no, it's an old slide of AURORA for illustration purposes and too granular for the RPM which only splits out east and west.

Heutte said this illustrates the issue as it applies AURORA and wondered about transmission expansion [Slide 24.] He endorsed the idea of a reference plant/transmission expansion approach, noting that proposed transmission line builds could make Southern Idaho solar export potential grow a great deal. Charles said this sounds like the limited markets scenario and the proposal she laid out on [Slide 27.]

Heutte then asked about the constraints on natural gas [Slide 25] pointing to last year's unusual circumstances. Charles said she incorporates gas pipeline capacity constraints from Steve Simmons, NWPCC, chair of the Natural Gas Advisory Committee. She said these constraints are similar to those in the Seventh Plan adding that there are no west side gas plants in the model.

Heutte said a gas pipeline expansion takes about three to five years, but new transmission takes 10 years or longer. He asked if the model can relax constraints to build east side gas and if pipeline expansion costs will be included in the resource costs. Charles answered yes and yes, explaining that if the model selects every gas resource, staff would add in expansion costs.

Heutte did not know of other wind repowering projects outside of PacifiCorp but thought there would be some within the Plan's 20-year horizon [Slide 31.] Heutte also heard about upticks in repowering solar. He wondered how this will be accommodated. Charles said that since there is a power plan every five years, staff will re-evaluate in the action plan period (next five years)

and monitor repowering proposals and developments. She said PacifiCorp's early wind repowering efforts to take advantage of expiring tax credits will likely lead to a lull and this is staff's best attempt using the existing system and current information.

Heutte thought there would be wind repowering in the second half of the Plan but said that solar advancements are moving very fast and staff should think about repowering in the 2030s. Charles agreed that this is speculative and pointed to the staff proposal (part B in particular) as an example of what staff is proposing.

David Nightingale, WA UTC, called this a reasonable approach as there are no average repowering costs yet. Charles said costs are very site specific and was hoping for better information in the future.

Charles asked that feedback and questions to be emailed to her. She then urged parties to attend the System Integration Forum for a deeper look at the proposed scenarios for the 2021 Power Plan and ended the meeting at 11:00 am.

Attendees Via Webinar

Gillian Charles	NWPCC
Aaron Bush	PPC
Ben Ulrich	EWEB
Bill Henry	dJoule
Bill Saporito	Umatilla Electrical Coop
Bryan Neff	CA Energy Commission
Charlie Black	CJB Energy Economics
Chase Morgan	Idaho Falls Power
David Nightingale	WA UTC
Deanna Carlson	Cowlitz PUD
Elizabeth Osborne	NWPCC
Frank Brown	BPA
Fred Heutte	NW Energy Coalition
Greg Nothstein	WA Dept of Commerce
Glen Best	Inland Power
Henry Tilghman	Tilghman Associates
Ian Bledsoe	Clatskanie PUD
Charles Inman	PSE
James Vanden Bos	BPA
Jeff Kugel	PNGC Power
Jen Kelly	N Wasco PUD
Richard Jensen	CA Energy Commission
Joni Zenger	Utah
Tom Kaiserski	Montana Dept of Commerce
Leann Bleakney	NWPCC
Lenore Marentette	independent

John Lyons	Avista
Jennifer Magat	PSE
Garrison Marr	Snohomish PUD
Max Greene	Renewable NW
Mike Hoffman	PNNL
Nate Sandvig	National Grid
Tomás Morrissey	PNUCC
Will Price	EWEB
Rebecca Smith	ODOE
Rich Flanigan	Grant PUD
Rick Williams	
Rob Diffely	BPA
Shirley Lindstrom	NWPCC
Terry Toland	Clark PUD
Tyler Tobin	PSE
Torsten Kieper	BPA