Northwest Power & Conservation Council
Demand Forecast Advisory Committee
May 18, 2021

NWPCC opened the meeting at 10:00. Chad Madron, NWPCC, reviewed how to best interface with the Go-to-Webinar platform.

Transportation and Hydrogen
Steve Simmons, NWPCC
A review of the transportation forecasting and the use of hydrogen fuel cell in the Paths to Decarbonization Scenario.

Andrew Rector, WA UTC, asked if electrolysis is done using renewables, natural gas, or something else [Slide 7.] Simmons answered that the model assumes grid on this first pass. He said the NW grid is relatively clean to start and will get cleaner over time. Simmons added that there are a lot of unknowns right now.

Tomás Morrissey, PNUCC, asked what the assumption is for hydrogen peak loads [Slide 10.] Simmons answered that it is assumed to be flat production from a centralized location, much like an industrial plant.

Mike Hopkins, Fortis BC, asked if there is any consideration of time of use rates or other ways to shift EV charging off peak [Slide 11.] Hopkins also asked if there is any consideration of curtailment of hydrogen production during peak demand periods. Simmons said not explicitly but the early years assume a peaky load pattern. He said that there are not a lot of electric vehicles on the road but predicts it will flatten out over time. Simmons added that a lot charging is assumed to be at home with more workplace and retail charging over time.

Scott Levy, Bluefish, responded to Morrissey's question saying that it may not be "much more demand for electricity", but "much less curtailment." Simmons agreed, saying there could be an opportunity to soak up inexpensive, mid-day power.

Jim McMahon, Better Climate, asked why EV market share is up four times in the Hydrogen to Transportation case as compared to the reference. He wondered if this is all due to policy and how economics compare. Simmons answered that economics are the same and this was a response to a potential WA policy that would require new registrations after 2030 to be electric.

Craig Patterson, independent, called for analysis around COVID and what might be the new normal. He also said he notices that around 70% of cars he sees on his commute carry a single person. Patterson said cars are synonymous with freedom and wondered how that is represented in this analysis. Simmons called these good points, particularly if more companies move to permanent work-from-home. Simmons agreed that public transportation took a hit from COVID as well.

John Rudolph, SCL, asked if all HDVs are assumed to use hydrogen fuel cell or if some will use longer duration batteries. He said it seems this assumption will impact load profiles if electrolysis is assumed to run flat. Simmons said this case assumes hydrogen fuel in the heavy-duty case but there could be a mix of battery electric too. He added that hydrogen uses less electricity which is an advantage.

Tyler Bryant, Fortis BC, said his organization did some work on peak loads and found that commercial vehicle electrification (60% BEV share in 2050) would be the largest driver of peak load on the system. He asked if this is generally consistent with Council forecasts. Simmons did not think so and asked what commercial vehicle electrification meant. Simmons said he used a generic, plug-in load pattern and was interested in seeing Bryant's results.

Jourabchi said he did run electric and Hydrogen fuel cell power for heavy duty vehicles and found peak load increasing by 15,000MW by 2050, calling it one of the largest increases in system peak.

Tom Potiowsky, Portland State, thanked Simmons for this work saying he thought the Oregon Global Warming Commission would be interested.

Pathways to Decarbonization
Massoud Jourabchi, NWPCC
Jourabchi reviewed the PTD scenario objectives, national and state targets and current and forecasted emissions. Jourabchi also reviewed mitigation strategies and assumptions, emissions from energy sources and non-energy sources, and state GHG goals and their impact on load, providing initial findings/takeaways on lowering emissions and decarbonizing the NW economy.

Levy asked if we are including the methane emissions from the many reservoirs (the "batteries") of our electrical system in the electric sector's GHG contribution. He recalled the Council-reported number to be in the millions [Slide 12.] Jourabchi did not think these emissions were acknowledged on the supply side but said he incorporated how much emission is there in this analysis.

Rose Anderson, OR PUC, asked if hydrogen for marine transport was considered instead of electrification, wondering how that might change the demand forecast. Jourabchi thought long-haul cargo ships would go to ammonia so hydrogen was not included.

Ryan Bracken, NW Natural, asked if the figures on [Slide 14] are aMW and what peak analysis was done for this work. Jourabchi said these are average but the study uses the full slew of peak and minimum for each of these changes. He added that some policies will lower peak. Bracken asked about building electrification. Jourabchi said there are both positive and negative contributions to peak and offered to send more information to the group via email or posting online.

Patterson asked about the historical context if this information, calling for it to be included on the graph. He pointed to a study that projected a 19% reduction in carbon by 2020, asking if that happened. Patterson noted other studies that could provide texture and context. Jourabchi explained that showing more history in graphs obscures the details. He asked that other studies and resource material be sent to him.

Dan Kirschner, NWGA, said he did not hear a direct answer to Bracken's question, asking as demand for natural gas in buildings declines due to appliance retrofits/fuel conversion, what is the corresponding impact ON PEAK to electric demand. Jourabchi said he will post those full impact numbers to the agenda page.

Jim Waddell, independent, responded to the answer to Levy's question, saying the NWPCC reported in the April 28, 2021 SAAC meeting that 6.5 MMTCO2E/YR are emitted from manmade reservoirs in the Northwest [Slide 21.]

Levy said using estimates from Project Drawdown (and awaiting confirmation from them) he estimates 20 to 30 MMT annual carbon sequestration by allowing Idaho's Temperate Forest to recover from its currently degraded condition (e.g. salmon recovery following LSR breaching as per Fish Passage Center modelling.) He asked if this analysis could be included once it is confirmed by Project Drawdown. Jourabchi said he has seen the study but wanted a more local set of numbers. He asked that anyone who knows more contact him as he is trying to be as comprehensive as possible in an evolving area.

Patterson asked how to view the projected transition against capitalism's intent of maximizing profits. He wondered how public good can replace individual choice. Jourabchi called this a good question asked in the wrong setting. He noted that consumer preference theories are calibrated to actual past choices.

Levy did not think that hydrogen production would increase load as savvy developers will capture zero or negative midday energy prices. He thought this might reduce curtailment in the short term. Jourabchi said the curtailment is estimated to be 13,000aMW but 34,000aMW is needed.

Terry Morlan, independent, asked if indoor growing would increase electricity demand as well [Slide 30.] Jourabchi said the crop's daily needs would match the daily solar output.

Waddell posted the chart he referred to earlier but was unsure as to which meeting it came from.

Jourabchi asked that members email him with questions, comments, and further research. He ended the meeting at 12:15.

Attendees via Go-to-Webinar

Massoud Jourabchi	NWPCC
Steve Simmons	NWPCC
Rose Anderson	OR PUC
Zoey Ball	Boise State
Glen Booth	BPA
Ryan Bracken	NW Natural
Michael Brutocao	Avista
Tyler Bryant	Fortis BC
Ted Drennan	NW Natural
Pete Eelkema	BPA
Cory Fong	MDU Resources
James Gall	Avista
Katie Hansen	Boise State
Fred Heutte	NW Energy Coalition
Mike Hopkins	Fortis BC
Allison Jacobs	PSE
Aaron James	NEEA
Dan Kirschner	NWGA
Scott Levy	Bluefish
Jim McMahon	Better Climate
Lorin Molander	PSE
Jody Morehouse	Avista
Terry Morlan	independent
Tomás Morrissey	PNUCC
Heather Nicholson	independent
Elizabeth Osborne	NWPCC
Tom Pardee	Avista
Craig Patterson	independent
Tom Potiowsky	Portland State
Jordan Prassinos	Idaho Power
Stephanie Price	PSE
Andrew Rector	WA UTC
Amber Riter	PGE
Brian Robertson	CNGC
Ken Ross	Fortis BC
John Rudolph	SCL
Adam Schultz	ODOE
Rebecca Smith	ODOE
Max St. Brown	Oregon
Jim Waddell	independent
Tara Anderson	Williams
Torsten Kieper	BPA