

**Northwest Power and Conservation Council
Demand Forecast Advisory Committee
January 30, 2020**

Massoud Jourabchi, NWPCC, began the meeting at 1:30 with a round of introductions and a review of the agenda.

Load Forecasts for the 2021 Plan—Demand Forecast Advisory Committee Webinar

Tomás Morrissey, PNUCC, recalled a past webinar where Jourabchi proposed shifting a portion of single-family housing units to multi-family in response to climate change and asked if that was still part of the methodology [Slide 9.] Jourabchi said yes, noting that it will be discussed in upcoming slides.

Amber Ritter, PGE, asked if the numbers on [Slide 11] are through 2018 or 2019. Jourabchi said these are the best actual numbers through 2018 and explained how they were extrapolated from the 2015 CBSA. He added that he's waiting for the CBSA 2 to inform a new benchmark.

Terry Morlan, independent, asked how the population number on [Slide 13] compares to the national forecast. Jourabchi said he hasn't done an explicit comparison but said he could. He added that there are no national numbers to compare in-migration but could look at Global Insight forecasts.

Morlan noted that the "optimistic" growth rate of residential units looks to be lower than the reference case [Slide 15.] Jourabchi explained that this artifact comes from annualizing the data.

Morlan asked where the min and max on [Slide 20] come from. Jourabchi explained that the slide incorporates two effects, economic conditions and possible population increases influenced by GCM.

Jordan Prassinis, Idaho Power, asked how these numbers will be used to inform the load forecast baseline for the 2021 Plan. Jourabchi said there will be 12 reference cases, based on three economic trajectories overlaid with four layers of climate change trajectories. Jourabchi said this will lead to a wider range of load forecasts.

Morrissey recalled that the last DFAC included talk of adjusting industrial outputs based on the historical elasticities of population change. Jourabchi said every segment was adjusted but he was very cautious when increasing industrial output. Morrissey thought it would be beneficial to see some of that data, especially data on the paper/pulp industry. Jourabchi said all documents are available online under the "indirect impacts of climate change."

Link below expands on secondary impacts of Climate Change.

<https://nwcouncil.app.box.com/s/p9cdzd3hvh8kb0ni9ie23hgcs9jes0wd>

Transportation Forecast

Steve Simmons, NWPCC

Morrissey asked if the numbers on [Slide 27] are higher than the numbers presented at the last DFAC. Simmons answered yes, explaining refinements, like declining electric vehicle costs, that led to them. Morrissey thought they looked much better.

Andrew Rector, WA UTC, asked if there was a standard number for the lifetime of Internal Combustion Energy (ICE) vehicles [Slide 29.] Simmons said it's around 17-18 years now but future policy like the Cash for Clunkers program could help take some of these cars off the road earlier.

End-Use Natural Gas Forecast

Steve Simmons, NWPCC

Pete Eelkema, BPA, asked if transportation is declining as it's replaced by EVs as illustrated on [Slide 33.] Simmons said transportation appears to be fairly level while the biggest change is in the slight decline of industrial sector use. Ritter asked how to interpret this with Jourabchi's earlier comment about an uptick in co-gen facilities. Jourabchi said the demand for co-gen depends on fuel price. He said this output is netted on the electric side and added on the gas side and offered to show more on a further slide.

Range of Load Forecast

Massoud Jourabchi, NWPCC

Morlan asked of the Federal government's current work to reduce all standards will be represented in a scenario [Slide 34.] Jourabchi said this forecast represents standards that went on the books years ago but admitted that there is danger of some backsliding.

"Draft" Load Forecast Under Selected GCM

Massoud Jourabchi, NWPCC

Morlan noted that climate change increased all the forecasts on [Slide 51] but the variation between each climate scenario didn't seem substantial. Morlan asked how much of the increase is due to direct versus indirect assumptions. Jourabchi said most come through the secondary effects of increasing population.

Morlan said it looked like climate change effected weather-sensitive segments the most [Slide 66.] He wondered if the weather-related variations are already captured in other parts of the analysis. Jourabchi said this was widely discussed by staff. He agreed that for the load forecast he could collapse the climate change scenarios into one but explained that that option doesn't work for the hydro or power generation side as they see greater variations between the scenarios. Morlan was encouraged by how much thought went into this solution.

Morlan noted that there is no supply side analysis and asked what coal replacement assumptions were used for [Slide 74.] Jourabchi said the limited gas build out comes from assuming State policies, RPS and other known CO2 emission policies are in effect. John Ollis, NWPCC, explained System Analysis Advisory Committee work that limited gas builds in WA, OR

and CA, adding that gas could be built in Utah, Wyoming and Alberta. Morlan asked if AUORA brought in other renewables. Ollis said the “unlimited gas” run saw lots of solar and gas builds while the “limited gas” run saw more solar with batteries and wind and a little bit of gas. He said it comes down to believing if the WECC will build 10 Giga Jules of gas versus 60 to 70 GJ. Morlan asked about the need for further possible calibrations. Jourabchi said that will be discussed in upcoming slides adding that the coefficients won’t change but the magnitudes will.

Morlan wondered if the presented assumptions were even feasible. Jourabchi stated that the goal of the analysis was to tease out how much can be done by just limiting the power and transportation sectors. He noted that a lot of emissions remain even under the most aggressive polices, stating that policy must cut across all segments, not just power and transportation.

Rector suggested bundling different policies into three groups, based on their likeliness of adoption, for the decarbonization strategies [Slide 80.] Jourabchi said that strategy makes sense.

Rector then asked about strategies around renewable natural gas. Jourabchi answered that Simmons is treating RNG as an alternative fuel and is working on cost and supply curves.

Morlan asked if forest fire emissions are included in the data. Jourabchi said he attempted to gather information but couldn’t find anything quantified explicitly enough to incorporate in the model. Jourabchi added that secondary impacts like increased fires, floods and landslides were researched and called for more quantifiable information. He also called for any information about the potential load impacts of a large, Cascadia Subduction Zone earthquake.

Jourabchi adjourned at 4:15.

Attendees

Massoud Jourabchi	NWPCC
Steve Simmons	NWPCC
Amber Ritter	PGE
Mike Lockwood	BPA
Pete Eelkema	BPA

Attendees via Webinar

Aaron Bush	PPC
Andrew Rector	WA UTC
Bill Saporito	Umatilla Electric
Ryan Bracken	NW Natural
Dan Kirschner	NW Gas Association
Grant Forsyth	Avista Corp
Frank Brown	BPA
Heather Nicholson	
Mike Hopkins	Fortis BC

Jim McMahon
Jordan Prassinis
John Lyons
Marissa Warren
Tom Pardee
Adam Rue
John Rudolph
Melanie Smith
Terry Morlan
Tomás Morrissey

Better Climate
Idaho Power
Avista Corp
Idaho Office of Energy and Mineral Resources
Avista Corp
EWEB
Seattle City Light
BPA
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PNUCC