

Northwest Power & Conservation Council
Systems Analysis Advisory Committee
February 8, 2021

Tina Jayaweera, NWPCC, opened the meeting at 1:00pm. Chad Madron, NWPCC, explained the best way to interact with the Go-to-Webinar platform. Jayaweera called for introductions, reviewed the agenda and pointed to the posted minutes from the last DRAC meeting asking for input.

Update on Plan Status and Scenarios

Tina Jayaweera, NWPCC

Jayaweera provided a quick overview of the schedule for the plan, where the Council is in the process currently, and highlighted two scenarios with alternate DR supply curves (Paths to Decarbonization and BPA-Optimize Resource Portfolio) along with a potential sensitivity around DR.

Tom Eckhart, UCONS, stated that he couldn't find agenda for the Systems Integration Forum. Jayaweera informed him that it is not yet posted and will be up in a few days.

Lee Hall, BPA, asked what is driving the scenario to test sensitivity if DR is dropped to zero. Jayaweera answered that this is just a sensitivity to test cost effectiveness of reserves. Ben Kujala, NWPCC, added that there are many system dynamics to test and this will help see how DR interacts with other resources in the GENESYS model.

Early Scenario Findings

Ben Kujala, NWPCC

Kujala reviewed early findings, beginning first with high-level themes and an explanation of "baseline conditions." Kujala defined "scenarios" and reviewed how they are created and used. Kujala then walked through early model outputs beginning first with the DR build, noting the impact of near-term adequacy needs on early builds.

Eckhart asked if there is a citation that determines if and when a natural gas peaker meets CETA guidelines [Slide 12.] Kujala said a high-level interpretation is included in the model and how much energy the region needs to meet a clean requirement. John Ollis, NWPCC, added that staff has also included state guidelines and individual utility goals. Ollis said there are still MWh of regional load that do not require a clean tag.

Questions

Josh Keeling, Cadeo Group, asked about the probability of re-examining supply curves given the initial finding, as it looks like a strong argument for more aggressive measures. Kujala reminded

him that these are models and may not reflect real life decisions. He added that the RPM tests a wider range of risk and points to the right resources and strategies.

Keeling agreed, but stressed that these findings look like the region is in debt. Ollis reminded him that the region was in an adequacy hole in the Seventh Plan and has relied on the market even though that was not in the Plan.

Fred Heutte, NW Energy Coalition, said that much of the pricing was negative two months ago and [Slide 12] shows them shifting up. He wondered what changes caused that effect. Kujala said many things have changed since the first look but the Adequacy Reserve Margin studies may be a main driver. Kujala recalled saying that these numbers will change after that first look and stressed that they may change again [Slide 28.]

Heutte noted that even though prices are rising the model is still not picking that much more EE. Kujala said this is a different world from when the least expensive resource is \$100/MWh levelized. Heutte said his group is looking closely at how EE is being presented to the model.

Heutte then asked what still needs to be done to fully bring the new GENESYS model on line. Kujala stressed the models are constantly evolving but said that adequacy is no longer the primary driver for resource builds. Because of this, Kujala didn't think results would change a lot but relative resource selection might change a bit.

Heutte clarified that there is not a lot of major tuning left to do. Kujala agreed, especially when it comes to EE but said he might feel differently about storage. Heutte said storage and DR are capacity and peak related.

Elain Prause, PacifiCorp, asked how much of the DR potential is acquired by 2026 when it looks as if new resources (other than renewables) level off. She said it seems like storage paired with solar covers new flexible resource needs post 2026 and was curious about which types of DR are selected or what's left on the table after that first early push [Slide 8.] Kujala said he's seeing a big wave of renewables without storage [Slide 14.] He said renewables continue to add throughout the study while some storage is added for capacity. Kujala said he is waiting for information on solar plus storage as that could make a difference.

Ollis added that this doesn't just apply to solar plus storage but to DR as well.

Keeling voiced concern about under acquiring DR and suggested a relook at the kind of DR that is being fed into the model. He used Time of Use rates as an example. Ollis said the redeveloped GENESYS is actually giving DR a little more flexibility [Slide 12.]

Keeling said the addressable market can change with rate-driven products. He thought it would hard to imagine getting to 2030, with all of those wild swings, and not have default dynamic rates. He suggested thinking about demand elasticity going into the next Plan. Kujala said the models are showing a different world and stressed not to take findings too literally.

Quentin Nesbit, Idaho Power, voiced concern that DR assumptions and prices are based on the premise of getting it. He said they can get C&I DR during the day or 1 KW from an AC program but it will be harder and more expensive from 8-10pm when the sun goes down. Ollis said there is some flex in the hydro system and that's why they look at capacity contributions in the redeveloped GENESYS.

Nesbitt called that helpful and then asked if the DR on [Slide 8] includes TOU or critical peak pricing or if that is a different assumption. Ollis said it's a bit generic when it comes to capacity contribution studies but that is enough to give an overall understanding. Kujala added that the Council is always looking for broad, regional themes so this is appropriate.

Heutte said this isn't about AC in the peak hour but how do we get all the customer side resources to work together better across the day. He called this an important issue going forward.

Andy Eiden, PGE, asked if the Council is calculating anything like ELCC for energy-limited DERs. He was also curious about the approach for cost-effectiveness for the proxy generation resource. Ollis said they are calculating ASCCs as they are similar but better tuned to the RPM.

Jayaweera said they don't yet know the cost-effectiveness for the proxy generation resource. She said a simple-cycle was used for the Seventh Plan but it is still too early to know the dynamics for this Plan.

Zeecha Van Hoose, Clark PUD, asked, in a world of negative pricing (for whatever period it occurs) how do we define cost effective. She stated that capacity cost vs energy cost in the NW, at least at the utility level, isn't very well defined. Kujala said persistent negative pricing shows that this is not a market that works well anymore. He said it will be hard to define cost effectiveness without knowing what the markets will be but didn't think they will be this.

Gurvinder Singh, PSE, asked if future EE will be increasing competing with lower cost renewables [Slide 19.] Kujala said the earlier buildout will be for everything: EE, storage...the model is trying to climb out of the hole. He added that later, EE is in a more competitive world.

BREAK

DR Ramp Rates

Jayaweera noted that early tests that doubled the availability of DR revealed that the model acquired that DR in the early years of the test period. She said this inspired a revisit to the ramp rates. Jayaweera presented proposed new ramp rates, noting that if ramp rates are accelerated may be additional cost considerations/implications.

Frank Brown, BPA, described the email he sent earlier, saying he laid out some actual ramp rates that were experienced in residential pilots, R&D and field tests from the 1990s. Brown

admits that this was a long time ago, the field tests were small and mostly no incentives were offered. He said that he always got about 15% of homes in the defined load area in the first year, about 12.5-15% in the second year and topped out at 30-50% of home signing up for water or space heating control or both. Brown said the programs were constrained by budget but were still successful.

Brown acknowledged why Council ramp rates are conservative but thought the three-year proposal was reasonable. Jayaweera noted struggling with the proper motivation to do DR, adding that Seventh Plan DR was not accomplished.

Heutte referenced a PGE/Cadmus DR/test bed review that revealed opt-out programs yielded less savings per participant. Still, he preferred lower savings from 80% of customers than twice as much savings from 8%. Heutte thought water heaters would yield a lot of participation and high average savings as most people don't think about water heating until they need it. He thought the opposite would be true for air conditioning or pricing programs.

Jayaweera clarified that programs with higher customer inconvenience factors that could be accelerated faster. Heutte called this the time to be optimistic.

Keeling agreed with Heutte, saying there are three types of DR: price-based, firm old-school switching stuff and smart stuff. He said the smart stuff, like thermostats, can yield high participation rates but there are not enough smart thermostats. Keeling said price sensitivity with incentives has a big impact with non-res but hardly any with residential.

Jayaweera clarified that she is not proposing changing total participation. Keeling thought they were connected saying they got to 30% on a bring-your-own-thermostat in a couple of years because it was easy. He thought the firm DR was harder because it was more complicated and onerous. Jayaweera summarized that price-based and smart products can ramp up quickly but more traditional, control-based products would be slower.

Sarah Vorpahl, WA Dept of Commerce, offered her non-expert opinion based on conversations during appliance standards rulemaking. She said a five-year ramp rate seems very fast for grid ready water heaters, given that the standard is for new water heaters only and the average life of a water heater is 10-15 years. She said, for WA, there seems to still be some work to get utility programs organized and deployed as well. She asked to hear from utilities on the line if they have opinions as well.

Jayaweera added that it's not just having water heaters available but having enough to make a program pencil out.

Heutte said water heaters have been one of his obsessions for years and now WA has code, OR is having a hearing on the standard and the CEC is looking at CTA 2045. He said we are not yet seeing how utilities are looking at this but still thought uptake will be high. Heutte said that

natural stock turnover and new builds will limit the resource but still thought it had a lot of potential.

Nesbitt said he pushed AC cycling hard to all their customers and after eight years they got to 10%. He thought it could go faster with more resources. He thought irrigation and C&I depends on program design and incentive but can go really fast. Nesbitt thought small co-ops have higher barriers and noted that AC switches can take months to order.

Jayaweera asked about price-based DR versus more controllable products for smaller utilities. Ahlmahz Negash, Tacoma Power, said they are in the middle of AMI rollout and are planning for a TOU rate as it would be easier. She pointed to a residential water heater pilot starting later in the year, calling it a long, hard haul.

Brown said he was involved in DVR projects in 1990-2009 and they always did DVR first as it delivered a big bang for the buck. He said the ramp was 0 the first year, 50% the second and 100% by the third but Snohomish took 6-7 years.

Eiden talked about PGE's CVR pilot on a few substations saying that distribution engineers are looking at expanding it.

Lakin Garth, Cadmus, stated that PSE's draft IRP included distribution efficiency but didn't remember details. He said SCL is exploring rate-driven DR and that Flathead Electric had a couple thousand storage water heaters on a DR switch program but also didn't know the number. Garth talked about demand curtailment that a Colorado utility was exploring but found they lacked centralized control systems.

Jayaweera moved to the Cost of Accelerated Ramp Periods and asked for thoughts. Heutte said we should look aggressively at DR ramps as you get what you pay for.

Keeling said incentive costs will be a big driver for C&I but residential direct load control will have costs in marketing and O&M. He said you can get into labor and supply constraints.

Ollis reminded the DRAC that this is a way to be more dynamic in the planning process and DR is significantly less expensive than a battery.

Hall thought the ramp rates could be shorter, better and the saturation could be higher. He thought the shorter ramp would put a higher cost and value on DR. Hall said this could result in more selected DR and wondered how you move from modeling results to action plan and getting DR built.

Hall said he valued the real-world experiences of Brown and Nesbitt.

Jayaweera said she will put together a better-defined proposal and share it out via email. Heutte noted that the proposed June meeting will be after the modeling is complete so it would

be more about the write-up and may offer a chance to discuss the final modeling. Jayaweera showed the scenario schedule and wanted the Pathways to Decarb to be complete before meeting again.

Heutte confirmed that the early June DRAC meeting would offer a chance offer input on the DR write up for the Plan. Jayaweera confirmed. Heutte said he was focused on the context and guidance in the Action Plan for DR.

Jayaweera ended the meeting at 4:00.

Attendees via Go-to-Webinar

John Ollis	NWPCC
Tina Jayaweera	
Ben Kujala	NWPCC
Chad Madron	NWPCC
Nick Bengtson	Energy Hub
Leann Bleakney	NWPCC
Kacia Brockman	Oregon PUC
Frank Brown	BPA
Aaron Bush	PPC
Lindsey Davidge	University of Washington
Tom Eckhart	UCONS
Andy Eiden	PGE
Ryan Fulleman	Tacoma Power
Lakin Garth	Cadmus
Lily Hahn	University of Washington
Leona Haley	Avista
Lee Hall	BPA
Fred Heutte	NW Energy Coalition
Kali Hollenhorst	SCL
Mark Jerome	CLEAResult
Josh Keeling	Cadeo Group
Hanna Lee	PBA
Ted Light	Lighthouse Energy
John Lyons	Avista
Kerry Meade	NEEC
Tomás Morrissey	PNUCC
Quentin Nesbitt	Idaho Power
Tim Nies	Energy NW
Elizabeth Osborne	NWPCC
Elaine Prause	PacifiCorp
Will Price	EWEB
Scott Reeves	Cadmus
Stuart Schare	Guidehouse

Adam Schultz	ODOE
David Siddiqui	Oracle
Gurvinder Singh	PSE
Taylor Thomas	Idaho PUC
Zeecha Van Hoose	Clark PUD
Sarah Vorpahl	WA Dept of Commerce
Kitty Wang	Energy Solution
Marissa Warren	Idaho OER
Cindy Wright	Seattle City Light
Brian Dekiep	NWPCC
Ahlmahz Negash	Tacoma Power
Ana Conde	
Katie Pegan	Idaho OER
Stephanie Price	PSE
Kerstin Rock	PacifiCorp