

**Northwest Power and Conservation Council
Generating Resources Advisory Committee
August 27, 2024**

Annika Roberts, NWPCC, began the meeting at 9:00am by calling for introductions.

Renewable Reference Plant Updates
Annika Roberts, NWPCC

Fred Heutte, NW Energy Coalition, stated that the information representing where solar is actually being built on [Slide 13] is not perfect but pretty close. Roberts said staff will try to get closer to perfect as they finalize results.

Nora Hawkins, WA Dept of Commerce, wrote: Are you defining community solar projects as solar resources located on the distribution grid? Or would it also include transmission connected resources? In the question pane. Roberts answered that these are transmission connected resources and the distribution grid will be covered later in the presentation.

Alexandra Karpoff, Puget Sound Energy, stated that the 2025 IRP updates and resource planning work is showing much higher utility and DER solar costs [Slide 19]. She estimates them to be about \$2000 per kW/year for utility scale and nearly \$4000 for DER. Karpoff said most of that cost comes from sourcing panels domestically. Roberts called that helpful, saying it will be considered when finalizing the numbers.

Heutte wrote, Also note that community solar typically has higher land, installation and interconnection costs relative to MW output because they are smaller and in more developed areas. in the question pane.

Landon Snyder, Snohomish PUD, added that he's also seen some cost weirdness as domestic sourcing is encouraged by the Inflation Reduction Act with a capital costs discount. He added that despite the discount you still get a "haircut" noting that the cost hasn't gone down even though there's an incentive to produce solar over the next 10 years.

Shannon Souza, Obsidian Pacific NW Hydrogen Hub, pointed to [Solar for All](#) funding coming to OR and other states in the region. She said this is leading to her group expecting upticks in community solar that is not necessarily operated by the utility. Souza then pointed to studying OR's county-level energy resilience which looks at community and [PURPA](#) projects that might not show up on an IRP. She said to look out for smaller-than-utility-scale, larger-than-rooftop solar trend coming our way.

Rob Del Mar, ODOE, added that Solar for All will be launching grants in Montana, Idaho, and Wyoming. He predicted that this will not be a capacity game changer but will have some effect and suggested looking at the targets for those states. He wrote, it may be worth

working with OPUC to get some actual costs in the Oregon Community Solar Program to date. in the question pane.

Heutte pointed to Oregon HB 2021 saying it has a community-based renewable energy requirement that is not the same as community solar but is similar from a resource perspective [Slide 20]. He said transmission interconnection limits will drive interest in these resources, even though the west side has lower solar output. Heutte thought it important that the modeling reflect all of these factors as much as possible. Roberts said this is important for the early modeling tests so they can best represent what is happening.

Snyder agreed that the model could game this point but suggested limiting the available scale year over year, so the model doesn't plant too many. Roberts said there is a maximum buildout.

Brian Dekiep, NWPCC, wrote, There are restrictions in Montana code for community solar and IOUs. Coops/publics can install community solar. in the question pane [Slide 29].

Jason Sierman, ODOE, said in his experience the Nevada wind resources don't look as eyepopping as what's shown on the slide. He acknowledged the co-location benefits of solar and wind, particularly if there is a transmission expansion. Sierman wondered if that was being accounted for. He stated that Nevada has pretty good solar but not the best wind, acknowledging that they might be pretty valuable if added together. He wondered if Nevada wind value might be valuable for the model to tease out.

Roberts said this will be covered in the next GRAC meeting. Sierman pointed to macro and micro co-location that can make a difference.

Heutte responded to Roberts question of including wind shapes for Idaho, Montana, and Wyoming saying looking at capacity shape and output factors makes it clear that east of the Rockies is a very different wind regime. He called the Montana shape interesting saying the big swing suggests that there is just not that much data. Heutte thought the shape should be more consistent.

Heutte wondered if the size of the wind machines is affecting capacity factors. Roberts said yes, noting that the slide shows 80/100 meter. Heutte thought that the industry is moving to 120 meter.

Roberts said the Montana shape is scaled for climate change but said they will look at weather data again.

Sierman asked if offshore wind is treated the same as onshore wind. Roberts said it is treated differently, adding that she doesn't have those shapes yet, but assured him that they will be different. Heutte stated that there are different offshore shapes for south coast Oregon than there is for Washington. He felt it would be worth looking at Washington more

closely for this Plan pointing to different findings from E3 and PNNL. Roberts said they will cover offshore wind later in this meeting.

Souza stressed the importance of looking at the locational significance of generating resources for islanded communities [Slide 33] noting that the south coast of Oregon fits this description. She understood the need for a WECC-wide look but was hopeful that the 9th Plan would examine the interplay between livability and locational significance. Roberts thanked Souza for her input.

Sierman asked how California's offshore wind ambitions will be modeled [Slide 34]. Roberts said they focus on the northwest region and model how the WECC affects the broader market. Sierman called that helpful but thought the interactions deserved a bit more thought. Roberts said she will check with John Ollis, NWPCC and report back.

Bill Henry, Pacific Ocean Energy, wrote: How are you assessing transmission costs? in the question pane. He elaborated on Sierman's earlier comment about the interactions with California, wondering about the transmission investment costs. Henry thought representing bringing California and southern Oregon offshore wind to load centers would be important to model.

Roberts noted that staff are not transmission planners but acknowledged that transmission plays a role in modeling. Henry asked for more information on how transmission will be integrated.

Dor Hirsh Bar Gai, NWPCC, explained that the Plan captures the WECC from a market perspective, which includes renewables. He addressed transmission, saying that transmission and capacity changes throughout the WECC are represented in the model. He said this can and will be further discussed in other Advisory Committees.

Sierman called this information helpful, asking if the model selects on costs and compliance requirements. Hirsh Bar Gai answered that the compliance side is a separate aspect of a different model, but costs are represented in hourly market bins. He noted that the 2029 resource adequacy assessment modeled external renewables, but staff are still analyzing what the next Plan should model to best incorporate forecast error. Hirsh Bar Gai assured Sierman that costs are embedded in the overall model.

Snyder advised caution on the ITC information represented on [Slide 36], saying the 70% seems good but the actual realized credit looks more like 30%. Roberts said the modeling will show how much difference the tax credits will make.

BREAK

Distributed Solar in the Pacific Northwest
Approach for the Ninth Power
Joe Walderman, NWPCC
Presented by Kevin Smit, NWPCC

Jaclynn Simmons, WA UTC, noted that the baseline for distributed solar will be built by state and location [Slide 9]. She asked how locations within states will be divided. Kevin Smit, NWPCC, said the process started with building by state and refining by BA zone. He said this means the data is less about the state and more by BA zones, but the process basically relies on where data can be found.

Simmons wrote: are we still seeing supply chain issues and is it accounted for here? in the question pane [Slide 16]. Smit said staff is aware of supply chain issues but didn't think they were represented in the graphs yet. He said staff is also aware of declining costs from 2000 leveling off. Smit said the final forecast will have to look at declining costs going forward and appreciated any members input.

Souza noted the challenge and cost of uninstalling and re-installing panels when remodeling or re-roofing homes, calling it a bit of a consumer hangover. She thought installing solar on 75% of rooftops was not going to happen.

Souza then addressed behind the meter project costs, likening needing a new electrical panel or roof replacement to a network upgrade for utility scale solar. She asked if utility scale projects are looked at the same way as these costs come in quite high.

Roberts said staff considers connection costs but will confirm and bring information to a future GRAC meeting. Smit added that aim is to treat all resource costs/benefits equally.

Souza suggested looking to the [Affiliated Tribes of Northwest Indians](#) (ATNI) for more incentives [Slide 18].

Snyder added that the federal tax credit portion was really odd for apportioning out credits for rooftop solar. He was glad staff were looking into it. Smit said staff would appreciate any updates GRAC members learn about. Snyder recalled looking in 2023 and finding \$8 billion to the EPA to spend at their discretion.

Karpoff said PSE evaluated rooftop solar in the last few IRPs and plan to in their upcoming plan [Slide 19]. She shared that their 2023 progress report showed that the high cost required the utility to schedule projects in. Karpoff then referenced their Clean Energy Implementation plan which sets target goals that should affect scheduling.

Karpoff said this year's plan will be interesting due to transmission constraints. Because of this she was curious to see if the model will pick more distributed resources. Karpoff then said procurement issues will still put limits on the resource.

Smit was also curious to see what Council modeling will show this time as many things have changed since the 2021 Plan.

Karpoff talked about modeling solar + a five-MW distributed battery (three-hour batter), saying costs also required that resource to be scheduled in. She said they are looking at doing the same in their upcoming Plan, but not linking solar and battery together in the models. Karpoff said they are linking them together for utility scale co-located and hybrid resources.

Snyder echoed that Snohomish PUD does the same. He noted even without additional incentive for customers there has been an uptick to install batteries with their solar. Smit confirmed that Snohomish is modeling these technologies separately and not as an integrated unit. Snyder said yes on the long-term planning side.

Sierman was curious about EV batteries. He acknowledged that many don't come off the assembly line with hardware that enables them to give back to the grid but thought that vehicle-to-grid capability might be coming. Sierman noted control software is still an issue for utilities. He then pointed to the possibility of more severe winter weather, saying even though there might not be enough data now it is important to keep digging.

Smit said this is on Council staffs' radar as part of the Demand Response modeling. He said there are plans to incorporate this in some way, but staff are not yet sure how. Smit said this will probably be covered in an upcoming DRAC.

Roberts ended the meeting at 11:00am.

Attendees via Zoom Webinar

Annika Roberts	NWPCC	Paul Lee	US DOE
Kevin Smit	NWPCC	Patti Chappel	E PUD
Jennifer Light	NWPCC	Joni Sliger	ODOE
Chad Madron	NWPCC	Haley Ellett	Hood River
Katie Chamberlain	Renewable NW	Mary Kulas	Nuclear
Frank Brown	BPA	Kaitryn Olson	Puget Sound Energy
Landon Snyder	Snohomish PUD	Tyler Tobin	Puget Sound Energy
Brian Dombeck	BPA	Nathan Critchfield	Puget Sound energy
Karma Hara	BPA	Nora Hawkins	WA Dept of Com
Craig Patterson	independent	Ian Bledsoe	Clatskanie PUD
Jeanne Currie	Clean Energy Transition	Elisabeth Robson	Protect the Coast
Sofya Atitsogbe	WA UTC	Ben Brouwer	Montana
John Ollis	NWPCC	Jaclynn Simmons	WA UTC
Carol Loughlin	Lakeridge Resources	Brad Westmoreland	PGE
Edmund Butler	Agate Point	Aaron James	NEEA
Eugene Rosolie	Advocates NWEA	Elizabeth Osborne	NWPCC
Greta Montagne	independent	Fred Heutte	NW Energy Coalition
Dale Beasley	Baker Bay		

Shannon Souza	Obsidian Pacific NW
Hydrogen Hub	
Rob Del Mar	ODOE
Bill Henry	Pacific Ocean Energy
Eric Graessley	BPA
Alexandra Karpoff	Puget Sound Energy
Andrea Talty	Puget Sound Energy
Bryan Neff	CA Energy Commission
Brian Dekiep	NWPCC
Ian McGetrick	Idaho Power
Jason Sierman	ODOE
Peter Jensen	NWPCC
Leann Bleakney	NWPCC
Dor Hirsh Bar Gai	NWPCC
David Clement	NEEA
Sarah Harper	Fervo Energy