

**Northwest Power & Conservation Council  
Generating Resources Advisory Committee  
October 21, 2024**

Annika Roberts, NWPCC, began the meeting at 10:30 and explained the best way to interact with Zoom Webinar. She asked Joe Walderman, NWPCC, to take attendance.

**Big GRAC Summer: Emerging Technologies  
Annika Roberts, NWPCC**

Fred Heutte, NW Energy Coalition, voiced concern over the 60-year economic life of equipment [Slide 12]. He asked what technology developers consider, predicting that the lifetime is probably less. Heutte called this important as it will impact the lifecycle costs in upcoming energy analysis.

Roberts thanked him, saying others have brought this up as well. She suspected the long life had to do with how long it would take to pay for an SMR but offered to do more digging.

Shannon Souza, Solcoast, encouraged Roberts to consider the ability to retrofit existing turbines, noting that some entities can retrofit 50-60% hydrogen right now and are working on getting to 100% [Slide 16]. She called this a more accessible transition than standing up new technology.

Souza then addressed the tax credit, pointing to growing interest in carbon capture pyrolysis at existing natural gas turbines. She said this offers symbiosis with co-located industries that can use the captured carbon.

Souza then asked about the size of storage in the proposed reference. She said storing enough electrolysis-generated hydrogen and complying with the existing 45V tax credit requires a lot of storage. Souza believed that, because of this, groups are looking at pencil storage as an alternative, quoting reference costs at \$110 Million for 100 tons of storage.

Roberts answered that the retrofitting option was reviewed during the gas turbine discussion and is very much on the radar, but pointed to the challenge of getting the hydrogen to the plant.

Roberts then said staff have thought about carbon capture as well and the topic is being discussed at the Fuels Advisory Committee. She addressed storage, saying her research is showing a pipe or tank that would offer a 24-hour duration.

Souza stressed that Council staff should consider retrofitting more deeply as pyrolysis and existing natural gas delivery creates a readily accessible, immediate transition step.

Patrica Levi, Form Energy, asked if the timing of hydrogen creation will tie to the availability of renewable resources. Roberts answered that this should be a clean process, referencing requirements around the IRA tax credit. Levi said her internal modeling found capturing that the timing around the generation, storage, and usage of hydrogen has notable impacts.

Souza reminded the room that the Northwest is timber basket, and biomass is real way to generate clean hydrogen.

Bryan Neff, CAC, asked about Intermountain Power Agency in Utah. He said they are proposing a hybrid, 30% hydrogen by volume for 10% energy, as a transitional phase solution. Neff added that they are generating by electrolysis with wind and solar and storing in salt caverns. Roberts said she is aware of this work.

Rob Del Mar, ODOE, did not have data but said the 40% round trip efficiency on [Slide 17] is about 5% higher than what he seen. Roberts said the studies she saw showed 40% and offered to compare resources.

Alexandra Karpoff, PSE, called the numbers “fine” but a peeker developed with the help of [Black & Veatch](#) would run on 100% hydrogen. She said they picked a specific turbine from Siemens but put availability out a few more years. Karpoff said they saw different variable O&M numbers after running it through some thermal modeling. She concluded by saying, as a placeholder technology, this is fine.

Roberts said the Council is trying not to pick specific technology and offered to connect offline.

Jennifer Light, NWPCC, reiterated that there will be opportunity to tweak numbers and resources before presenting to the Council. She asked for more thoughts over the coming months.

Roberts pointed to future GRAC meetings and ended the meeting at 11:15.

**Attendees via Zoom Webinar**

Annika Roberts, NWPCC

Jennifer Light, NWPCC

Joe Walderman, NWPCC

Chad Madron, NWPCC

Ian McGetrick, Idaho Power

Frenk Brown, BPA

Landon Snyder, Snohomish PUD

Cindy Wright, Seattle City Light

Karma Hara, BPA  
Lori Hermanson, Avista Corp  
Mary Kulas, Public Power Council  
Aaron James, NEEA  
Heather Nicholson, Orcas Power & Light  
Haley Ellett, Hood River  
Gary Nelson, Innovation Beyond Zero  
Jeff Allen, NWPCC  
Peggy Beltrone, independent  
Arlene Sherrett, independent  
Blake Scherer, Benton PUD  
Ben Luxenberg, Gale Head Dev  
Katie Chamberlain, Renewable NW  
Glenn Blackmon, WA Dept of Com  
Patrica Levi, Form Energy  
Crag Patterson, independent  
Travis Nelson, WPUA  
Joni Slinger, ODOE  
Curtis Diouhy, OR PUC  
Peter Jensen, NWPCC  
John Ollis, NWPCC  
Shannon Souza, Solcoast  
Brian Dekiep, NWPCC  
John Lyons, Avista Corp  
John Goroski, Flathead Coop  
Elizabeth Osborne, WA Energy Policy Office  
David Clement, NEEA  
Bryan Neff, CEC  
Tomás Morrissey, NWPCC  
Rob Del Mar, ODOE  
Robert Diffely, BPA  
Fred Heutte, NW Energy Coalition  
Alexandra Karpoff, PSE  
Terry Toland, Clark PUD  
Lisa Stites, GC PUD  
Brad Westmoreland, PNGC Power  
Scot Levy, Blue Fish