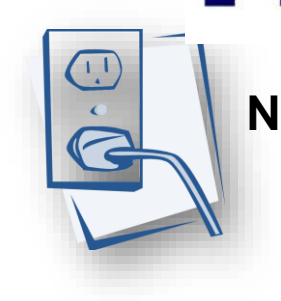
PNWCC REPORT Council



Northwest Power and Conservation Council

Meeting Notes
February 11 & 12, 2020
Portland, Oregon

Council Meeting attendees got a more-detailed glimpse of the myriad ingredients that go into formulating the 2021 Power Plan. Ben Kujala shared many of the inputs that need to be gathered for analysis. The Power Division team is on a hectic pace as Member Patrick Oshie said the plan will be completed early next year. Members shared a moment of celebration with Jaime Pinkham, executive director of the Columbia River Inter-Tribal Fish Commission (CRITFC), for their legislative victory on pinniped removal in the Columbia River.

Council Members Richard Devlin, Jennifer Anders, Ted Ferrioli, Jeffery Allen, Bo Downen, Guy Norman and Patrick Oshie were in attendance. Member Jim Yost joined by phone. The next Council Meeting will be held March 17 and 18 in Portland, Oregon.

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The Agenda

Kujala previews the 2021 Power Plan recipe

Ben Kujala, Power Division director, shared the Council's analytical process that goes into building the 2021 Power Plan. Methodically going through a portion of his slides (there were 95 in all), Kujala highlighted key ingredients and differences with prior plans:

Forecasting prices for natural gas and other fuels. Gas will play a large role in the Plan. Gas informs the price of electricity because gas-fired plants are often the marginal unit in the resource

stack. Member Devlin asked how long natural gas will be a key factor as more jurisdictions pass legislation similar to Washington and California. Kujala replied that natural gas plants will be with us throughout the Plan and will remain critically important for the next 20 years. We might not have a lot of new natural gas builds, he said. California wants to phase them out by 2045, but he's not sure how they'll get there.

Forecasting the consumption of natural gas. This highlights where natural gas greenhouse gas emissions are coming from, and looks at the impact of strategies to reduce emissions. Residential, commercial and industrial sectors accounted for 27% of Northwest carbon dioxide emissions from fossil fuels in 2016.

Forecasting regional transportation fuel consumption. Providing a fuel and technology forecast helps estimate the future market share of electric vehicles. It includes fuel consumption, electric load, vehicle unit sales and forecast vehicle stock. The transportation sector is a significant carbon dioxide emitter in the West.

Defining environmental costs and benefits of a new resource. When estimating the overall system cost of a particular new resource or measure, the Council must include quantifiable environmental costs and benefits that are directly attributed to the resource. Environmental effects that cannot be quantified are often addressed qualitatively.

Developing generating resource reference plants. A reference plant is a collection of characteristics that describe a resource technology and its theoretical application in the region. It includes capital costs, logistics and operating specifications. There are three resource categories: primary, secondary and emerging/long-term.

Other items. Ben went through the forecasting of energy use with price effects, energy use with frozen efficiency, and out-of-region energy loads; as well as the development of energy efficiency supply curves.

Different federal and state lighting standards headed for court

To develop the conservation supply curves for the Power Plan, the Council uses federal efficiency standards and state codes that are in effect during the planning process. However, now there are different codes for general service lamps.

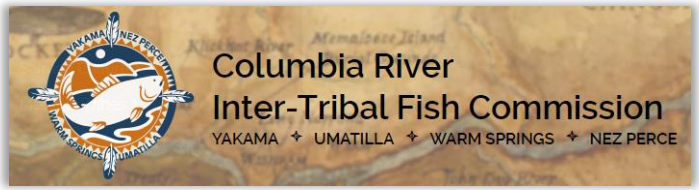
Andrea Goodwin, senior counsel, explained that last May, Washington passed legislation requiring general service lamps to meet or exceed an efficiency of 45 lm/W. In December, California also adopted a minimum standard of 45 lm/W for general service lamps, which is bound to have an impact on the market.

Although, the U.S. Department of Energy issued a final determination, concluding that the standards for GSILs do not need to be amended — as more stringent standards would not be economically feasible for incandescent bulbs. It effectively rescinds the backstop requirement as applied to incandescent bulbs, Goodwin said.

Suffice to say, this is likely headed to federal court, but in the meantime, staff must soon decide which standards apply in determining the baseline for the conservation supply curves. Tina Jayaweera, senior energy analyst, told the Council staff will use the federal standards in effect to develop the baseline, and assume it applies to lamps sold in Oregon, Idaho and Montana. Washington's standard will be used for lamps sold in that state.

Staff proposed including language in the Power Plan that backsliding on cost-effective efficiency codes and standards is poor policy, but the specific language still needs to be drafted. Member Ferrioli said he would like to see a strong articulation of standards in the Power Plan. Uphold the standard, place the bar high and resist the impulse to argue with other people. States are free to set higher standards, he said.

Pinkham, Norman and Booth praised for pinniped legislation



Some battles are tougher than others, and after more than a decade of perseverance, states and tribes now have the legal clearance to battle salmon predation by seals and sea lions. Jaime Pinkham, executive director of the Columbia River Inter-Tribal Fish Commission (CRITFC) worked with Council Member Norman and former Council Member Bill Booth to advocate for the Endangered Salmon and Fisheries Predation Act, which gives more flexibility to remove sea lions that prey upon threatened and endangered salmon and steelhead in the Columbia River. Member Allen presented each with framed copies of the act, signed by President Trump. According to Allen, Pinkham was the quarterback in the effort and Booth called it one of the best memories of his 10 years on the Council.

Addressing avian predation will require a regionwide effort

Just when you think you've addressed one problem, another rears its feathered head in the case of terns, gulls and cormorants that are feasting on outmigrating juvenile salmon and steelhead in the Columbia Basin.

CRITFC's Jaime Pinkham and Blaine Parker discussed the frustrating results trying to thwart avian predation. "Ratepayers have invested $11.8 billion in salmon and steelhead restoration since

1981," Parker said. "If deference is given to one species over another, there's no balance. We're seeing drops in some areas of predation, but we're still losing millions of important fish."

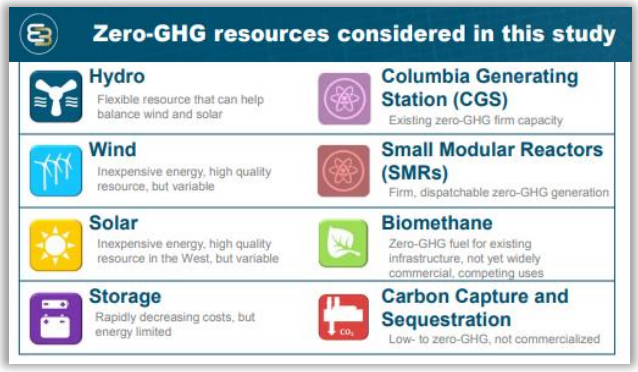
For example, Parker said they're at a 50 percent loss of tagged steelhead from Rock Island, and two-thirds of those losses are from gulls. The Corps installed $10 million worth of hazing wires at John Day, but once the fish pass them, they're hit by birds. The tribes have been active on avian predation since the mid-1990s. He described the different strategies employed to haze the birds, but it hasn't been effective. They just move from one place to another, many feasting on juvenile salmon just as they enter the salt water.

Pinkham said they've been meeting with the regional director of the Fish and Wildlife Service and the regional coordinator of the U.S. Army Corps of Engineers to explore options. The geographic area is scattered and there's a range of species. He said they are building an avian predation plan that has flexibility and consistency, and looks forward to the Council being a part of the process — not only with the science, but with the political will from four states.

Member Allen observed that it seems like the Corps is willing to work on the islands in the Columbia Basin they're responsible for, while U.S. Fish and Wildlife wants to save every bird. Pinkham replied there's a strain among missions. We need political cover to make some decisions, he said. They won't have that without our nurturing and encouragement. Member Norman agreed, stating that together they accomplished something difficult with the pinniped legislation. This will be similar. The stage is set to make this a priority and get somewhere.

Energy Northwest study sees a decarbonization role for nuclear

As the Northwest moves toward decarbonization, the Columbia Generating Station (CGS) and small modular reactors (SMRs) can play a clean, cost-effective role in firming up renewable generation, explained Greg Cullen, Energy Northwest's energy services and development manager. He also advocated including relicensing CGS and using SMRs in the Council's Power Plan modeling. Energy Northwest operates the CGS nuclear plant as well as hydro, wind, solar and storage projects in the region.



Energy Northwest commissioned a study by E3 to look at the cost of renewable, storage and gas portfolios versus portfolios with a robust zero-emitting resource fleet. The zero-emitting resources considered were hydro, wind, solar, battery storage, CGS, SMRs, biomethane, and carbon removal

and sequestration. The E3 study showed that meeting peak load without natural gas would require renewable and storage overbuilds, which would be a very expensive proposition. A system that relies on wind, water, solar and battery storage would require more than 100 GW of new capacity in 2045 to maintain reliability, at a cost of more than $8.6 billion per year over a base scenario that uses natural gas.

CGS is already licensed to operate through 2043, but renewing the CGS license for another 20 years shaves about $1.4 billion per year off those costs. According to Cullen, SMRs reduce the cost of achieving 100% GHG reductions by $6,700 million per year. If there are no new gas generating builds, the E3 study picked SMRs in its least-cost scenario.

Member Anders recalled the Diablo Canyon demonstrations in the 1960s and asked about the region's sentiments on incorporating more nuclear. Cullen replied that as climate change has jelled as a key issue, he's starting to see anti-nuclear people become more in favor of it.

Member Devlin said the study falls two-to-three years outside the Council's planning horizon, which is why SMRs aren't at the forefront. He recognizes that a large share of the nation uses nuclear power, but the underlying financial structure of BPA and Energy Northwest are also important factors. Any assumptions we make now might change dramatically within five years, he said.

Power Committee Briefs

- Member Oshie, Power Committee chair, announced they expect to be finished with the Power Plan in early 2021. He said the accelerated pace may require meeting between regular Council meetings.

- Ben Kujala provided an overview of Power Plan scenarios. These include the robustness of energy efficiency, markets for energy capacity, greenhouse gas tipping points and paths to decarbonization.

- Gillian Charles, energy policy analyst, made a presentation on natural gas reference plants. She described the different technologies for each and they will make a decision at the next meeting on which direction to go for the Power Plan.

- Charles also talked about geothermal technologies and opportunities in the Northwest. There is not a lot of development at this time, Member Oshie said, but there is a lot of potential in Oregon and Idaho; less in Montana and Washington. Exploration is very expensive and there are lots of dry holes. Developers need deep pockets and a lot of interest.

- Massoud Jourabchi, economic analysis manager, and Steve Simmons, senior economic analyst, updated the committee on load forecasts and global circulation models for the Power Plan. These include precipitation changes, temperature forecasts, behind-the-meter solar, impacts of transportation changes, and end-use natural gas forecasts.