

Jennifer Anders
Chair
Montana

Bo Downen
Montana

Guy Norman
Washington

Patrick Oshie
Washington



Northwest Power and Conservation Council

Richard Devlin
Vice Chair
Oregon

Ted Ferrioli
Oregon

Jim Yost
Idaho

Jeffery C. Allen
Idaho

November 2019 Council Meeting

Minutes

Tuesday, November 12

Council Chair Anders brought the meeting to order at 1:34 p.m. All Members were in attendance except Vice-Chair Richard Devlin, who joined by phone.

Reports from Fish and Wildlife, Power and Public Affairs committee chairs

Fish and Wildlife Committee

Member Guy Norman, chair of the Fish and Wildlife Committee, reported on five items:

1. Staff reported on comments received on the Fish and Wildlife Program Amendments. It generated 114 comments, most focused on Part One of the addendum. There was a discussion over a staff recommendation for a limited extension on Part One to enable a regional process to occur. Part Two would be approved in January as scheduled. This will be discussed today with the full Council.
2. There was a presentation from the Kootenai Tribe and Idaho Fish and Game on their burbot program. A lot of ecosystem alterations and habitat development has led to burbot's almost functional extinction in 1990. Since 2003, they have undertaken a recovery program to study habitat needs and implement hatchery supplementation. About 1.4 million burbot have been released into the Kootenai River since 2009. They're not seeing significant wild production, but the strong abundance of hatchery numbers allowed them to reopen fisheries in 2019.
3. The committee heard from Jen Bayer, from the Pacific Northwest Aquatic Monitoring Partnership, which has been part of the Fish and Wildlife Program since 2004. They

hold workshops and facilitate collaboration across projects and programs to improve efficiency and effectiveness of monitoring and data sharing across the region.

4. The Washington Department of Fish and Wildlife talked about their aquatic invasive species program. They focus on prevention, detection monitoring and rapid response. There are a number of pathways in Washington waters. They're trying to prevent the spread of zebra and quagga mussels, northern pike and European green crab. Inspecting boats is a big part of the work.
5. The Umatilla tribe talked about their fresh water mussels program. The current abundance is very low. Freshwater mussels are an important cultural resource for tribal communities.

Power Committee

Member Devlin, chair of the Power Committee, reported on four items:

1. There was a segment on the general circulation model scenario selection, which has to do with the range of future stream flows and temperatures. The committee decided to incorporate climate change into the Power Plan. It needs to look carefully because some of the ranges might be outside of the Power Plan. There was a discussion on using available quantitative data, which is used by BPA and the U.S. Army Corps of Engineers. This will be brought before the Council in the future.
2. The Power Committee heard a natural gas price forecast from Steve Simmons, senior economic analyst. Gas prices for the next three-to-five years are expected to be relatively low and stable because of an abundant supply. But there is less certainty in the long term. Coal plant closers may have an influence, but it's unknown.
3. The Power Committee also looked at another Power Plan building block, the onshore wind reference plant. The difficulty with evaluating wind is that they all have the same cost, but the capacity factors and transmission costs are different. Therefore, they prepared three different reference plans for the Columbia Gorge, Southwest Washington and Montana.
4. A look at website analytics will be on the agenda next month.

Public Affairs

Member Jeffery Allen, chair of the Public Affairs Committee, said no meeting was held last month, but there is a lot of work underway. Montana is looking for a spot to hold the Congressional Tour in August.

1. Update on Public Power Council: Scott Simms, executive director, Public Power Council

Ben Kujala introduced Scott Simms, who assumed his new role as Public Power Council (PPC) executive director last summer. Before, he was communications director at Bonneville Power Administration. He shared the key initiatives underway at PPC.

Simms said PPC is looking at BPA competitiveness: how to ensure what we're investing today will pay dividends tomorrow. It's not just about power, but all the ancillary benefits gained from the system. They continue see a marketplace with low natural gas prices, which further drives down the surplus price BPA can charge for energy. It puts a crimp on revenues. We're all familiar with BPA's situation, he said. While it's doing okay now, with the public power sector largely paying its bills, the worry is for the outyears. There are 100-plus utilities looking into their resource future. They have options: batteries, storage and other resources. General managers and commissioners are having to make decisions about affordability, and there are strong environmental considerations in the Pacific Northwest.

BPA has benefitted from its 20-year contracts and the financial markets like that certainty. But in 2028, will customers sign long-term contracts again or shorter-term?

Simms said while BPA can't control the price of natural gas, it has turned a corner on cost management internally and there's still some room for improvement. They want to take a closer look at institutional costs, he said. Some of those have been stakes in funding the hydro facilities. There are a variety of socialized costs ascribed to the hydropower customer for navigation, flood control, etc. He said they're talking with Congress, the region, the Army Corp of Engineers, and Department of Interior about those cost allocations.

Simms said they're looking at BPA's carbon fees — what they pay for third-party entities that conduct transactions in the California marketplace. It's not a huge outlay (\$5-8 million), but if other states recognize the carbon value of electricity trades, it could grow as a cost for Bonneville.

BPA's opportunities for revenues could come from EIM participation. Simms said PPC appreciates their public process in this. It's a tremendous opportunity to gain more revenue in the future.

As for fish and wildlife mitigation costs, PPC submitted comments on the Council's Fish and Wildlife Program Amendments. PPC said that where cost increases are needed, they should come from cost reductions in other program areas that have outlived their usefulness. It's about what Bonneville can afford and what makes the most sense in terms of investment, he said. Simms said they're not talking about walking away from obligations, but that we need to look at societal costs.

Member Bo Downen asked how customers see BPA's future. Can you give me a better sense on how engaged customers are to help BPA cut costs? Sometimes our staff feel it's put upon us to control BPA costs. We see articles in Greenwire that say the wheels are falling off, but it looks competitive in the short term.

Simms replied that there has been a narrative about BPA being in a financial tailspin, but that doesn't help anyone. Telling the marketplace that an entity could be on unstable financial footing isn't a good signal. Competitiveness means you care and want it to succeed, and that's where we are with BPA, he said. Customers are engaged on integrated program review cycles and its rate cases. We review and attend their technical forums, listen to quarterly financial and program updates, and are involved in program meetings at the utility and association level. We meet with Elliot to go over the cost trajectory BPA is projecting and what other resources are lining up.

Member Devlin asked a question about BPA's cooperative regional debt. He said BPA kept its power rates down by reducing its debt requirement by \$60 million. How do the members of PPC view that debt? Is it an obligation of BPA's or do they have a responsibility for the debt too? If Bonneville defers the principal payment on its debt, and has a reduction in the number of customers or sales of power, it will end up with a smaller base to pay that debt.

Simms replied that BPA has long-term contracts with customers and will pay its debt through those. BPA's strategy is to retire as much of that costly debt as it can. When it was at Wall Street this year, Bonneville locked in a lot of savings due to proximity. I appreciate their diligence in trying to reapportion that debt at lower rates, Simms said. In terms of the membership's view of the debt, he'll get back to Member Devlin.

Member Ted Ferrioli said that a conversation about fair allocations is timely and necessary. Many in the West involved in natural resource management understand that there's a public interest in management, but not in paying the cost. Those costs get transferred to local communities. There's a lot of concern about fish and wildlife program costs, which total about one-third of all the costs of BPA. If we save too much in that arena, we end up in the Ninth Circuit Court of Appeals, he said. The last thing we want is judges allocating programs and costs. So let's have that fair allocation conversation, figure out how to monetize reliability, but I don't see the fish and wildlife costs as an opportunity for great savings. They're preventing greater costs, in my opinion.

Simms replied he's just talking about additional obligations. He penned a piece for the Seattle Times with Seattle City Light general manager Debra Smith recently that looked at salmon restoration goals beyond what the hydrosystem can accommodate. It's a little bit of a white flag because we can't bear this alone, he said.

Simms said that In public power, there are more low-income people than in the rest of the Pacific Northwest. It's an emerging social justice issue. We have low incomes and seniors shouldering more of the burden than other ratepayers in the region. The regional economy has been built on a low-cost power system. We're producing something on the world stage where the margins are very tight.

Member Norman asked about the energy imbalance market (EIM) as a potential opportunity. We heard from BPA on the process for entry. What are the key outcomes in that program that would turn it into a significant positive? Simms answered that there's a certain amount of power BPA has always held back. The EIM allows them to better ascribe and use the power and transmission reserves. Plus, it maximizes the access to markets. Mainzer is adamant about getting a price signal for a carbon-free and capacity-rich resource that hydro brings. Wind and solar are great, but they're not capacity rich.

2. Update on the Walla Walla Spring Chinook Hatchery, Project #2000-038-00, Walla Walla Hatchery Final Design/Construction

Mark Fritsch, project implementation manager, introduced Gene Shippentower and Craig Contor, both with the Confederated Tribes of the Umatilla Indian Reservation (CTUIR); and Mary Todd Haight, with the Bonneville Power Administration.

Fritsch said the presentation is a status update of the Walla Walla Spring Chinook Hatchery, which was started in August 2018. The permits are obtained and the engineering completed. He said this action was in the Council's 1987 program. The Umatilla ushered in a lot of work through water optimization and passage to give these fish the potential to live in the upper Walla Walla system.

Shippentower started with the Umatilla Tribe in 1988. This is really exciting to finally get the hatchery built to help reintroduce spring Chinook, he said. He showed a map with the hatchery location, release sites and spawning grounds. He reviewed the project history from conceptual design to ISRP approval. He outlined the construction schedule and said groundbreaking should happen in December or January. They hope to see the first adults to be spawned in 2021, the first smolt release in 2023, and adult returns after 2025.

Shippentower said project costs will total \$21.1 million. About \$3 million has been spent to date.

Haight said the project manager is Gerald McClintock, who has learned a lot from prior hatchery projects. It's a team effort with the tribe, the Council and Bonneville. They remain intent on staying within budget and on schedule to open the hatchery in spring 2021.

Member Pat Oshie asked if they consider this a supplementation regime for collecting broodstock and genetic management. Contor said yes. As the ISRP indicated, they are concerned about the proportion of natural spawners. In the master plan, there are three phases of management depending on the amount of returns.

Member Oshie asked if the raceway design is common. Brent Hall, attorney for the tribe, replied that it is a reintroduction program for the Walla Walla Basin. They are using a raceway design and it took several years to settle on the design.

Member Norman said he's trying to get over the fact that the satellite facility got underway in 1997. In terms of the Mill Creek release site, are there are some passage issues? Hall said that progress is being made, but it's slow. We've put concrete features in the channelized areas to help the fish get through, but more work needs to be done.

3. Review of public comments on draft Fish and Wildlife Program amendments

Patty O'Toole, acting director, Fish and Wildlife Division, told Members they had a successful public comment period. They received 114 written comments, held eight public hearings and had numerous consultations with interested parties. There was a good session earlier with the Fish and Wildlife Committee talking about one particular issue, which is how to proceed with Part One of the Addendum.

O'Toole said a year ago, many recommendations asked for the Council to restructure the adaptive management section of the 2014 Fish and Wildlife Program. Recommendations asked the Addendum to identify biological objectives, to document gaps between objectives and the current status of fish and wildlife, identify annual reporting requirements, and to link the strategies and measures to goals, objectives, limiting factors and threats.

Recommendations also asked the Council to establish quantitative baselines to measure progress. The Council included a preliminary way to do this, recognizing it would take place over time. They included a set of performance indicators that would need refinement.

The state fish and wildlife agencies and tribes are asking the Council not to adopt Part One and to begin a process to discuss what are the most appropriate goals, objectives and indicators for the program. They want to collaborate on how the Council and others will gather, synthesize, report, assess and use program performance information over time.

While a delay of 12-to-24 months was suggested, the Council prefers a six-month process. The timeline isn't quite resolved. Part Two would continue on its current path for adoption in January. Extending Part One would not impede the Power Division's progress on its plan.

Member Norman said it was a good discussion in the Fish and Wildlife Committee. He said many Members were in a place where they think they responded to recommendations we received to emphasize program performance and implementation. The comments are an indicator we started down the right trail. There is a lot of interest in delaying adoption while we work with region on revising and developing goals and performance indicators. We found some merit in that, he said. The aim is to get this as right as possible and set the stage for having the region onboard and fully engaged.

He said the committee was in favor of a six-month extension, recognizing that doing so would require a time commitment from staff and fish managers.

O'Toole said if the Council supported this direction, they could bring back a schedule next month and get a commitment from the right people to set up workshops.

Member Devlin spoke in support of the committee's direction. It won't impact the Power Plan and we can't lose sight of the necessity that we measure performance in the program, he said. We shouldn't step back from requirements in Part Two either. We don't have authority over budget decisions BPA makes, but the ISRB can review to the program to determine if it's meeting the original objectives.

John Shurts, general counsel, said there are concerns over how this information will be used. It will involve some Member meetings with other high-level stakeholders. It doesn't change the decision structures in the Northwest Power Act. We'll need to have those conversations in the next few months.

Member Oshie said that like Member Devlin, he's not a part of the Fish and Wildlife Committee and supports the staff's recommendation. I agree with Shurts' comments about being clear about our expectations, he said. If we end up with a six-month process without milestones being met, then we have a problem. We don't want a compressed or rushed product. We want a substantive outline on what will be achieved.

Member Jim Yost said he appreciates the staff's work. He said the Council could pass this version with minor changes in January and then move forward. If we need further discussions going forward then let's do so, he said. It forces everyone to work in good faith. We would have a default position of having it in the plan. If you want to go ahead and do this in the meantime, I just don't agree with it.

Member Ted Ferrioli said it was a great presentation at the committee meeting. The feedback was positive in totality. But there was a caveat with the positive comments. People are concerned with the details. I'd have the same concern whether I was a manager of a program or worked with one of the sovereigns, he said. This extension is a way to transmit to the tribes and project managers that we trust them to fill in the details. We could adopt the addendum, but would still need to backfill the details. I don't want the decision to be unilateral. What needs to happen between now and the December meeting is a lot of outreach with those who asked us not to adopt. This can't be an interminable process. I'm happy to go three or four months, and then to a two-month public process. I think it's doable. My understanding is we're not making a decision today, but at the December meeting. This is a draft where we solicited comment and we got it. I'm supportive.

Member Downen said he supports what the staff said and hopes what comes out in December will be wrapped up in six months. A lot of parties asked for considerably more time. It would be disappointing if we don't have a strict timeframe.

O'Toole reviewed the remaining issues in Part One. First is a list of accomplishments that drew attention. More were suggested. There were comments on the wildlife section to fix the math. There were notes that the approach taken to double habitat units in the addendum isn't acceptable.

Shurts began a discussion of Part Two. They received comments on nearly everything, but they didn't raise issues that change the major points being made — just items that can be addressed in editing.

1. Climate change: We have a strategy already and we didn't see specific policy issues. We need to set up a science policy forum. We received one set of comments said we need to do more planning on climate change and its impacts.
2. Mitigation of blocked areas: One is on the Upper Columbia at Lake Roosevelt with some comments in support. Spokane and Kalispell tribes wanted more specifics. There's concern about whether it's justified and its impacts on BPA's budget.
3. Anadromous fish reintroduction: We received comments in support and those seeking more detail on what happens next. There are concerns about reintroduction's relationship to the program.
4. Anadromous fish mitigation in the Snake River/Hells Canyon complex drew comments.
5. Ocean research: Ocean impacts need to be included. But some wonder if it is something the program should be concerned about.
6. Libby and Hungry Horse: One set of comments on whether the Council should recognize flow and operations updates.
7. Resident fish passage: Kalispell wanted this included.
8. Removal of Lower Snake River Dams: Some want it included.

9. Predator management: We received a lot of comments in support. There's a northern pike provision that received support. More responsibility needs to be given to the Federal Hydro facility. Others say it's not BPA's role.
10. Pinniped management: There was a call for stronger language and funding.
11. Commitments: Things have happened since 2014 — the Accords, Biological Opinion, sturgeon. People want recognition for what they've done.
12. How programs and budgets are being managed: We tried to recognize when it's time to intervene. The pushback on the 5% threshold was strong.

The Council received a lot of comments on Part Two. But many were general comments, such as:

- We got it about right.
- Environmental fishing groups: The program is a complete failure. There's a sense of urgency.
- BPA and utilities: People are concerned about making sure we have nexus, that the program prioritizes important things, and concerns about budget and effectiveness.
- The document doesn't reflect the work already being done.

Member Anders said the plan from here is look forward to January, when we will adopt Part Two. What are we doing between now and then?

O'Toole said there's a Council meeting in December, where we'll take up a lot of this. There will be a couple of long sessions. We'll need time at the January meeting to reserve hours to work through this.

Member Anders said there are questions on Part Two. Shurts said they will come back with staff recommendations on how to deal with them. We'll just work through them, he said.

Member Allen asked if aggressive scheduling will take place over this next month. O'Toole will bring that information back in December.

Member Ferrioli moved that the Council enter into Executive Session to discuss personnel matters.

Member Downen second.

Motion approved without objection.

Chair Anders recessed the meeting at 3:39 p.m.

Wednesday, November 13

Chair Anders brought the meeting to order at 8:30 a.m.

4. Review of the Upper Columbia United Tribes' Fish Passage and Reintroduction Report

Erik Merrill, independent science manager, introduced Independent Scientific Advisory Board chair Dr. Stan Gregory and member Dr. Tom Quinn.

Merrill acknowledged and thanked members of the Upper Columbia United tribes, and the Colville and Kalispell tribes for assisting with the review. Gregory presented his findings on the reintroduction report, representing the ISAB members.

Gregory showed a map of the salmon reintroduction area above Chief Joseph and Grand Coulee dams. These areas have been blocked for more than 80 years. The 2014 Fish and Wildlife Program identified key steps for reintroduction:

- An evaluation of passage information for Grand Coulee and Chief Joseph dams and other blockages;
- An assessment of habitat availability, suitability and salmon survival potential in the blocked area; and
- An investigation of the scientific feasibility and possible cost of passage options.

Gregory said the Reintroduction Report addressed all of these elements except for cost analysis. It also included:

- Evaluation of donor stocks
- Disease risks
- Predation
- Climate change

Quinn Said that they found the report very thorough and scientifically credible. Criticisms were around clarifications and minor adjustments. He said that donor stock selection is very important. Recolonization efforts have some uncertainties and are often not successful outside of their native area.

Quinn listed a number of donor stock concerns, saying that depending on the ancestry of the fish, they could be less likely to be anadromous. Looking at steelhead reintroduction, he said disease issues prompted a concern it would infect trout, so that was rejected. If steelhead are reintroduced, resident redband trout would be a preferred donor source because they likely are ancestrally related to steelhead in the Upper Columbia River.

- Disease risk — temperature can make diseases more virulent and contagious.
- Predation risk — it's not the only or most important, but it's a major factor. Northern pike is something to be taken seriously. It has the capacity to be a serious predator.
- Smallmouth bass – another predator. They do better in warmer water and are expanding into the river systems. They are a significant concern.
- Walleye – a nonnative predator.
- Piscivorous birds – impact smolt or adult returns.
- Sea lions and seals – have been increasing in abundance and habitats. Marine mammals will play a big role.

The predation risk is high, but variable. The report lists projected ranges and suggests using bioenergetic models to model the effect of predators.

Habitat assessments can look at the potential using models. The report provided a reasonable assessment of the capacity of the habitat in the blocked area. Additional information will be needed for future decisions. The biggest uncertainty is the relation of habitat because the data was poor. Estimates of potential adult capacities for Chinook and sockeye had wide ranges. Some reports were in terms of miles or in numbers of salmon. Different models don't come up with the same conclusion.

Climate change is certain to play a larger role. Ocean survival is a particular concern and is not addressed in this report. Mitigating for the changing climate is a big challenge.

Gregory said the Life Cycle Model provides a framework for integrating information on potential habitat and reproductive capacity for identifying data gaps. It's a way to explore uncertainties. Reading from his slide, he said the model is deterministic and incorporates little or no stochasticity or density dependence. The model does not acknowledge interannual variation or regime shifts on ocean productivity.

He said there are wide ranges of estimates of habitat availability and variation in adult spawning capacity. Decisions based on the lower end of the distribution of estimated capacity should be more conservative and precautionary, given the wide range of uncertainty.

Passage alternatives considered adult and juvenile passage. The current functional ladder could be used to trap and haul. The report explored five possible options and all could be used. ISAB found the approaches to be reasonable. Getting juveniles downstream over the dams represent a much greater challenge.

The consequences of total dissolved gas supersaturated water were not considered in the passage assessment, but they may reduce survival and limit passage alternatives.

Costs were not assessed because specific donor stocks and passage systems have not been selected.

Gregory read the ISAB conclusions:

Though it is reasonable to expect that reintroduction could be successful to some extent, there is great uncertainty about the numbers of adults that will return and the management that will be required to maintain them. A strategic plan for future steps and an adaptive management process will be needed.

The ISAB encourages the UCUT and the Council to make decisions with caution because the estimates of capacity and habitat availability are very imprecise. The UCUT and their collaborators put a great deal of thought and effort into this assessment, and make the fundamental issues and management alternatives accessible to tribal members, many stakeholders, the Council, and BPA.

Member Norman said he appreciates ISAB and the quick turnover of the report. He asked if there is an opportunity to make an assessment that would look at sustained natural production run versus continued supplementation, which is similar to the Snake River approach. Gregory said he thinks the Snake River example is appropriate. Tribes would probably have to approach with it with supplementation. The uncertainties are so large, they couldn't come up with definitive answer from lifecycle models. They could use lower-end estimates for capacity and then run those forward with worse-case to determine the likelihood of self-sustaining populations.

That's the beauty of using a model. You can run the numbers without spending money on the infrastructure. Gregory said he was surprised by the harvest rates for upriver fall chinook salmon. The modeling is at 58 percent, but it is actually at 75 and 80 percent.

Member Allen observed that Dr. Quinn said not to discount ESA-listed stocks. Is that because there are some genetic opportunities? Or is the thought "why not go to Pluto?" Quinn said the thought was they are untouchable because permitting would be so challenging. Is it a net gain? Since we're in the thought experiment phase, it's worth considering. To not consider them wouldn't be prudent. We just didn't want to rule them out. Gregory said the ISAB understood and respected the tribes' decision not to use listed stock for their biological outcomes and the issues they would face. But it's a future possible alternative.

Member Allen thanked them for the report and for the phenomenal turnaround time. They did a good job saying how valuable cost analysis would be. Where do we need to turn at this point for more comprehensive cost information? Gregory said they think cost analysis

needs to be done soon, but they will need to narrow some alternatives or they'll get an enormous range. The cost analysis is important because while there are a lot of uncertainties on the science, it's also uncertain on the economic and policy side. The cost would be the biggest stumbling blocks. We're trying to address scientific credibility.

Member Devlin said you have an ISAB report, but an actual proposal would go through ISRP. Merrill replied that is correct. Member Devlin said he's seeing a lot of cautionary statements in the ISAB review. Should we approach this slowly on an incremental basis? Gregory agreed but the ISAB isn't recommending "slowly" but it is saying "incremental." It depends on putting the information into a cohesive package.

Randy Friedlander from the Colville Tribe made remarks by phone: When people come up to this portion of the basin, it's a different environment. There's cooler water, higher gas levels and predation is all of our problem. They hope to address northern pike and pinniped predation. They want to be cautious about looking at feasibility. When people talk about fish and harvest numbers, our tribe's allocation is 500 fish. The Spokane, Kootenai, Kalispell and Coeur d'Alene tribes' harvest allocation was zero. They do adult management. At end of the season, we'll end up with fish with less flesh quality and we need to remove those from the system and put them into a landfill. It would be cheaper to haul them one to two miles, put them in a reservoir and let them spawn.

5. Clark Public Utility District Update: Lena Wittler, CEO and general manager, Clark Public Utility District

Wittler became Clark County PUD's CEO and general manager last June. She said her first job at 16 was working for the U.S. Army Corps of Engineers at the dam as a tour guide. She has a wealth of experience with analytics and benchmarking, and she hopes that new technology and research will inform their decisions going forward.

She's proud that Clark County PUD received the J.D. Power Award 12 years in a row for customer satisfaction. She likes the survey because it looks at all aspects of the utility. She said this is a financially stable point in time for utility. There is a lot of stability in customer satisfaction too and there's pressure to continue that. They haven't started talking with BPA yet about their contracts. She said they're probably not going to sign 20-year contracts, but would rather be more flexible because things will be changing. Looking forward to seeing what new renewables and technologies will be available. The PUD's former leader, Wayne Nelson, was a great, stable leader for the utility. She worked with him for 20 years.

Wittler said there are lots of new compliance and rulemaking systems in Washington state. The PUD has a wind farm and they're selling the power into California. They will start bringing it into their own system instead in order to increase its renewable percentage to comply with state mandates. She appreciates the nimble and flexible staff the utility has.

We've been involved in resource and adequacy discussions, she said. We're not a balancing authority, but we're all paying close attention.

The PUD is working on wildfire mitigation plans. They are learning from other utilities, such as San Diego's weather monitoring stations. She's interested in the research aspect and she feels fortunate to have worked at the PUD for 20 years, working in different departments. The PUD has a stable senior leadership team and they have been going through its budget process during the last month or so. The utility is proactive on maintenance and improvements, such as tree trimming and planting trees. She talked about her employees' extensive volunteerism efforts in the Vancouver community.

Member Yost asked for the customer breakdown. The PUD has 180,000 residential and 20,000 commercial and industrial, Wittler said.

She was asked the wind farm load, which is 57–60 MW. Coming in at full capacity, it's about 3-4% of our load, she said.

Member Richard Devlin observed that one of Clark's generating facilities is the River Road natural gas-fueled plant, generating 30 percent of the utility's electricity. By 2030 they will have to be 80 percent carbon free, so he asked how the utility would achieve that. Would they use renewable energy credits, pay penalties or use energy transformation projects?

Wittler replied probably all of the above. She said they get 60% of their load from BPA, and they are looking at potential electrification plans. It will be interesting looking forward if there are credits to offset, she said. I don't want to lock into credits because we're told there will be more opportunities for affordable clean power. I'm hoping we won't have to take the penalty costs. We're similar in our portfolio costs to an IOU because we have that generating plant. It's now running at full capacity or it doesn't run. Maybe there will be different technologies so that it runs less.

Member Ferrioli said there's a lot to consider when looking at a 20-year contract. Certainty is a value. With new technologies, it's difficult to decide which one to invest in. The issue we'll be watching is how a utility meets the needs of customers when the policy arena is moving so rapidly. No person's property is safe when the legislature is in session.

Member Oshie asked what Clark PUD customers are seeking. Wittler said they want choices, especially in when or how they contact the utility. This includes the ability to text back and forth with the utility and, interestingly enough, it's the younger customers who want to call in and talk to someone about their usage. The utility doesn't have smart meters, so they can't alert customers to high usage. I think that will be interesting moving forward, she said. As Tacoma Power implements their smart meters, they'll learn from them

Member Downen asked how younger customers see their utilities. Wittler has seen new demographics in employees and customers. They want variety and don't want to do the same thing. Line workers are going off to California where they can make more money. We want to be flexible enough to encourage them to come back, she said.

Member Norman praised the PUD's StreamTeam program, which is the utility's volunteer-driven stream restoration program. It has a salmon in the classroom program and leased a hatchery for environmental education. Member Norman praised the PUD for its education and community outreach programs. Wittler shared that they are also a water utility, so they are incorporating that into the school curriculum. They want to start that stewardship at a very young age.

6. Update on Wholesale Electricity Price Forecast and Avoided Emissions Rate

John Ollis, manager of planning and analysis, provided Council members with a look at the impact of state policies on forecasts. These adjustments they can make in the Power Plan, he said. The Council uses its AURORA model to update its studies.

Ollis reviewed the study timeline and what areas they updated. The main components of the study were:

- WECC buildout
- Mid-C Pricing – how prices change in relation to other parts of the WECC.
- Avoided emissions rate

Originally, buildouts were heavily reliant on natural gas buildouts, but now there is resistance to those new plants. For example, the Arizona commission has a moratorium on building gas. Ollis tried to model a limited gas case. He explained how that works. Gas plants take about two years to build. In the West Coast states there's no new gas, whereas there is gas build in Utah, Wyoming and Alberta.

Ollis provided an overview of what the buildout is in each year for solar, wind, storage, gas and geothermal. Showed the buildout with gas build limitations and without. With limitations, it's helping storage become more economic.

Ollis showed a comparison of buildout by scenario — more nameplate MW of resources are needed when there are gas plant build limitations.

He showed where and what new resources are built by 2025. With gas limitations, you build a lot of solar. He said maybe the West isn't that short and California has a hole to fill. If you limit gas, they build a bunch of storage. If you didn't limit gas, they'd build a lot of it. The

desert Southwest remains a large exporter to California. Most of wind is located in Wyoming and Colorado.

State policies aren't the only thing driving renewable builds in limited gas scenarios. WECC is pretty far along, assuming a large amount of renewables still get built by 2025. He said that limiting gas builds lowers production costs but raises fixed costs.

Ollis read through the buildout summary:

- There's a move from higher production costs to higher fixed costs with more renewable buildout.
- The total costs are slightly more expensive with limits on gas.
- Coal retirements are filled in by a kitchen sink approach, but there is more wind and solar with storage than just single axis solar on its own (unless more gas builds are allowed).
- State policy drives significant renewable buildout. Clean buildout is already bolstered by significant hydro but it needs augmentation from renewables to meet state targets. The WECC is closer to meeting targets due to hydro and nuclear.

Ollis provided a wholesale power price update, talking about price ranges in the Midterm Assessment and the Seventh Power Plan.

- Annual Mid-Price: Expected annual Mid-C Prices stay fairly flat in the limited gas case, but creep up slightly in the no gas limit build.
- The Social Cost of Carbon scenario sees a huge initial decline in prices as the existing coal is pushed off the margin in almost all hours.

Ollis discussed annual Mid-C prices versus other regional prices with no gas limits. Mid-C prices still vary significantly depending on natural gas prices with limited gas builds.

Hydro conditions' effect on Mid-C pricing with limited gas builds: High hydro conditions still result in low prices, and low hydro results in higher prices.

High and low gas prices and assumptions on gas buildout change prices in the Desert Southwest considerably, Northwest hydro conditions hardly change them at all.

Ollis shared the wholesale electricity price conclusions:

No gas build limit scenario results are consistent with previous 2018 study, limited gas build studies has some differences:

- State policies effect prices more on limited gas build studies.

- Limited gas build scenarios add enough low fuel cost renewables to keep Mid-C prices virtually flat on an annual basis, but introduce more daily variation.
- No gas build limit scenarios maintain similar market price differentials throughout the WECC, however, in limited gas build studies some areas (like the Arizona, Colorado, Wyoming) build so many renewables that the annual average market prices fall precipitously later in the study.
- Fuel price and hydro condition variability are still the two biggest drivers in annual Mid-C price variation.

Ollis said if there are limits to new gas power plants being built in the next 20 years, we will begin to see significant seasonal changes in intraday pricing throughout the WECC. He said that clean/renewable portfolio standards and state policies are leading to significant solar builds that continue to depress mid-day pricing and create higher prices in the evening ramp hours.

Looking at CO₂ emissions, the cost of future carbon dioxide regulation has been a significant factor in resource planning in the Pacific Northwest. He said clean/renewable state policies seem to lower average CO₂ emissions rates and temporarily lower marginal CO₂ emissions rates over time. Ollis said the study shows that massive, renewable buildout in the beginning limits emissions that can be avoided on the margin in some hours due to hydro or efficient gas being on the margin. He said that load growth means that higher-emitting fossil fuel resources are on the margin, which could raise emission rates slightly at the end of the study horizon.

7. Review and finalize the web-based program performance and progress tool

Carol Winkel, senior writer and editor, introduced the webpage as a tool to educate the public about the Council's Fish and Wildlife Program. It's visually based with minimal text. There are links to more information to provide greater context.

Nancy Leonard, program performance manager, said they received input from 31 managers and others. It shows what the program has accomplished. It has four main sections: improving dam passage, enhancing habitat, improving populations and reducing predation. Each section has a "learn more" option to connect to other stories, maps and resources. Public Affairs has provided a wealth of information. Most of it is high level. If people want further details, they can go to the program tracker, which is coming in 2020. There is a hot topics section with a look at what the Council funds, as well as other topics of interest. There's a partners page with links to their organizations, and a credits page.

Member Downen asked if it will link from the Council's home page and be easily found. Other pages are hard to find from our site. Leonard said they'll use social media to guide

people to the site. Right now, it's a Fish and Wildlife tool and will be on that page. It could be on the home page for a time to call attention to it.

Leonard is looking for a head nod from Council Members to put it on the site. Anders said congratulations and it looks like everyone supports it.

8. Update on the Asset Management Strategic Plan

Mark Fritsch, project implementation manager, provided an update of the accomplishments to date. He worked with Crystal Ball and project leads at BPA, and worked with hatchery managers and the Fish Oversight Committee. There is a presentation on fish screens in addition to this update.

Fritsch reviewed the plan's background. Long-term maintenance was the highest priority in the 2014 Columbia River Basin Fish and Wildlife Program emerging priorities. The focus was on hatcheries, screens and lands. He reviewed the project timeline and past expenditures.

The effort included assessing the fish screen inventory and building a resource map for all the lands.

Fritsch covered the recommended allocations and planning funds. About \$1.7 million has been allocated for these nonrecurring needs. He summarized a timeline of hatchery and screen work.

He read the annual process and future assessments slides:

Annual

- January - request priorities from sponsors and managers
- February to April - review priorities received
- April - discussion and confirmation of priorities, based on available funds.
- May - Fish and Wildlife Committee discussion and recommendation to Council.
- June - Council decision and recommendation to Bonneville

Five-year Assessments

- Conducted by an independent engineer and FSOC – anticipated in 2022

Council qualifications:

- The Plan approved by the Council on October 10, 2018
 - Provide annual updates to the Council on accomplishments
 - Establish discussions with Bonneville to explore the development of an endowment fund

- Starting in FY2021 the current annual \$500,000 placeholder fund will be secured from:
 - \$250,000 through cost savings from program projects that have decreased expenditures
 - \$250,000 from the Budget Oversight Group placeholder: Norman asked how much money we're dealing with. Fritch said a balance of a \$1million. But that's being discussed with BPA.
- Confirm implementation of the plan prior to 2021 actions

Danny Didricksen, Washington Department of Fish and Wildlife fish screening section manager, talked about the Westlund Fish Screen Refurbishment project. It had been 28 years since the screens were installed and they had never been refurbished. He described the process.

The four fish screens were transported back down to the Westlund Irrigation District site and were made ready to install prior to the irrigation season. In total, the screens took a about three months to undergo the refurbishment process.

Member Ferrioli credited the work of former Council Member Bill Booth and former BPA manager Brian Mercier. Going forward, they will continue with Crystal Ball's help using a more systematic refurbishment process.

Fritsch said he can't stress enough how core these screens are to their work. They capture some of our best investments to date.

9. Update on Resident Fish and Sturgeon Category Review:

Lynn Palensky, project review manager, told Council Members that three of four category reviews have been completed. All the sturgeon projects are in this review. It's a total of 47 projects with about \$35 million of funding. They have completed wildlife and mainstem, resident fish and sturgeon are underway, and anadromous fish (habitat and hatcheries) are slated for next year next year.

Palensky said they want to look at what data can come out of these projects that can help us assess performance in the program. She assessed performance indicators and went through the review timeline. She said they will look to put recommendations for Council approval in Summer 2020. The heavy workload is on sponsors right now. The state and central workload begins in April after getting a review from the ISRP.

Member Anders asked about the changes in Part One of the program. Will there be some questions about the lack of indicators? Palensky replied they looked at the list of performance indicators and they're solidly in the program in the proposal template. She asked the sponsors to look at what's in the program already and what data are they collecting that can contribute to those performance indicators.

Fritsch added that it gives us an opportunity to see what their monitoring is on their current project.

10. Council Business

Northwest Power and Conservation Council Motion to Approve the Minutes of the October 15-16, 2019, Council Meeting

Member Ferrioli moved that the Council approve for the signature of the Vice-Chair the minutes of the October 15-16, 2019, Council Meeting held in Seattle, Washington.

Member Yost second.

Motion approved without objection.

Motion to Approve the Appointment of Josh Korman, Kurt Fresh and Richard Carmichael, Each for a Three-Year Term, to the Independent Scientific Review Panel

Erik Merrill listed the appointments. He said Council staff asks that the Council appoint Josh Korman, Kurt Fresh, and Richard Carmichael to the Independent Scientific Review Panel (ISRP).

Staff also asks that the Council discuss the appointment of Courtney Carothers, John Epifanio, Dana Infante, Kenneth Rose and Thomas Wainwright to the ISAB. That appointment is done by the Administrative Oversight Panel, which approved the recommendations.

Merrill described the expertise that is needed for these groups. There is a big turnover currently. He said he looked out for conflicts of interest in the appointments.

Member Ferrioli said he appreciates the thorough vetting of the panel members.

Member Anders thanked the three for stepping up to the plate.

Ferrioli moved that the Council approve the appointment of Josh Korman, Kurt Fresh and Richard Carmichael, each for a three-year term, to the Independent Scientific Review Panel.

Norman second.
Approved without objection.

Merrill recognized Nancy Leonard's contribution to the ISAB. It was announced that Leonard is leaving the Council and is starting a new position as StreamNet program manager at Pacific States Marine Fisheries Commission.

Public comment

Jared Erickson – Colville Tribe

Erickson said he serves on the tribe's fisheries committee as vice chair. He said he's a biologist and shared his lineage. He thanked the ISAB for their suggestions on their phased approach. We're the most impacted and least mitigated tribe, he said. We talked economics and what it will cost. We probably won't see a lot of benefits. The local economy has flourished and we look at what reintroduction could bring. He acknowledged the work that UCUT has done and thanked WDFW and USGS. He would like to see the whole cost funded and is hoping to move to phase two.

Chair Anders adjourned the meeting at 12:16 p.m.

Approved January 14, 2019, 2019

/s/ Richard Devlin
Vice-Chair