Council Meeting
August 13 and 14, 2019
Portland, Oregon

Tuesday, August 13, 2019

Chair Jennifer Anders brought the meeting to order at 1:30 p.m. All Council Members were in attendance.

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

Fish and Wildlife Committee

Council Member Guy Norman, committee chair, reported on:

- The habitat research, monitoring and evaluation strategy – There is an ongoing effort to put together a habitat strategy for the basin. They're seeking a programmatic and consistent approach. It will be released at the end of month for manager input.

- There was an update on the committee's mainstem and program support project review recommendations. It was approved for full Council review tomorrow.

- There was an update on the next project review on resident fish and sturgeon. It will be launched this November and completed in August 2020. There are 40 projects. Following that, there will be a review of the anadromous fish habitat and artificial production projects that will be launched in November 2020.

- The Regional Coordination Forum met yesterday and drew more than 50 people. There was an update on the Fish and Wildlife Program Amendments and a good exchange with staff and Council Members. There was an update on Columbia Basin habitat research, monitoring and evaluation strategy. They discussed the ongoing

effort associated with the hatchery workgroup, trying to define what the group will accomplish. There have been lots of changes in the last 20–25 years. It's a regional effort by the entire basin, but applies to Council processes. They heard about the upcoming fish and resident sturgeon review, the mainstem review and there was a future discussion on the ecosystem effects of large numbers of shad returning to the Columbia River.

Power Committee

Council Member Richard Devlin, committee chair, reported on:

- The committee revisited the scenario list for the 2021 Power Plan. The scenarios are looking at broad issues that might impact the Plan. They vary from the accelerated closure of the remaining coal plants in the region to the impact of more-rapid decarbonization of our power supply. There are seven scenarios listed on the Council's website.

- There was a Power Plan process review of environmental methodology. At the top of the Council's list of the most economic resources are conservation and energy efficiency. John Shurts, general counsel, made clear what could and couldn't be included.

- The committee discussed an estimate of system adequacy requirements. While it is not to be confused with the annual assessment that looks five years out, it is a part of the underlying Power Plan.

- They discussed the process for analyzing resource strategies. The AURORA model deals mostly with power markets, the Regional Portfolio Model deals with new resources under uncertain conditions, and the GENESYS model deals with issues around resource adequacy.

- There was an update on planning parameters for energy efficiency supply curves. The desired penetration number selected is 85% for adopting new energy efficiency measures. In the future, it might be adjusted for individual measures where they might be higher. There was also a presentation on the overhead cost to implement these measures. Traditionally, 20% was the figure used to implement a measure, not including savings. No one is recommending any change to that, Member Devlin said.

- A review of the timeline and project update for the Power Plan indicates it's on schedule and on time.

Public Affairs Committee

Council Member Jeffery Allen, committee chair, reported that they met last month and have been consumed with the Congressional Staff Tour. There is a public meeting today for comment on the Fish and Wildlife amendments at the close of Council Business, and the public is invited to attend.

1. **Briefing on the Douglas County PUD Hydrogen Project**

Elizabeth Osborne, senior energy policy analyst for the Washington Council office, introduced Gary Ivory, general manager of Douglas County PUD, which owns and operates the Wells Hydroelectric Project. Douglas County PUD is headquartered in Wenatchee, Washington, and serves Douglass and Okanogan counties.

Ivory said they jumped into hydrogen to resolve some of the inefficiencies created by hydroelectric energy generation. He showed a video on hydrogen energy.

Ivory explained the process for extracting hydrogen. A proton exchange membrane electrolyzer sends an electric current through water and splits it into hydrogen and oxygen. The hydrogen captures electrons, so it is used as an energy carrier. It's clean and renewable, he said, and the only waste is water. He said they plan to use hydrogen gas, also known as "power to gas," in different industrial processes and to fuel vehicles.

Douglas County PUD plans on starting with a 2–4 MW electrolyzer and will have to ramp up over time. Ivory said they're a small balancing authority in the Northwest. They have 10 hydroelectric units creating 125,000 horsepower. Ivory then described the process used to balance the electric grid. Electrolyzers are nonmechanical and can be ramped up and down in milliseconds. He said they hope to be a wholesale provider in using hydrogen in industrial applications.

Douglas County PUD sponsored state Senate Bill 5588, which allows Washington PUDs to produce, distribute and sell renewable hydrogen, as long as they use renewable electricity like hydropower to do it. It passed both houses, garnering a lot of bipartisan support.

Hydrogen may not be the solution to all our problems, Ivory said, but to get into a situation for clean, large vehicles, this can play a role. He said that utilities don't play a large role in research and development, and utilities need to be a greater part of it.

Council Member Pat Oshie asked how tech came to the attention of Douglas PUD? Ivory said that going back to the 1960s, Douglas PUD has always looked for alternatives. We're perfectly situated geographically for big storage processes, he said. They started on

hydrogen about two decades ago and looked at putting a fuel cell in. We pulled the trigger because the timing is right for clean fuels, he said, which is evident by the support we received in the legislature. Equipment prices are coming down and are very affordable.

Member Oshie asked if there is there a future among utilities for a hydrogen fleet. Yes, definitely, Ivory replied. We're moving that way rapidly. We have several backup diesel generators to back up utility processes and those could be replaced. There are data centers using huge amounts of diesel generators for backup power. You can drive your car home and if the power goes out, you can use it to power up the house.

Member Devlin mentioned Toyota. A lot of companies have investigated fuel cells, he said. Do you know if Toyota is investigating large vehicles? Ivory replied that said Toyota partnered with Kenworth as shown in the video. Member Devlin then asked about infrastructure and cost. Ivory said the stations cost about $1 million, but they can service about 500 cars a day. Nikola is planning to build their own fueling stations throughout the Southwest and the nation.

Member Devlin said that the difference is they have a distribution system in place. Ivory added that he's a fan of electric vehicles.

Member Norman asked about the price differential. Ivory said that in California, the Toyota car sells for about $50,000. The fuel is expensive, about $12–$16 a kilogram, which is about $6 a gallon. Because we have low-cost hydro in the Pacific Northwest, we project our costs would be significantly less, he said.

2. Presentation of Clean Energy Transition Institute/Evolved Energy Research Study on Pacific NW Deep Decarbonization

Mike Starrett, energy analyst, introduced Eileen Quigley, Clean Energy Transition Institute, and Gabe Kwok, Evolved Energy Research.

Starrett said we've seen deep decarbonization studies before. But they aren't unique to the Northwest. Colorado and New York have done them. The reasons are policy and resource costs. We've seen costs decline 40–80% on renewables since the Seventh Power Plan. There have been lots of policy changes in the last year or two. There's a consensus view that we can get to 85–95% clean energy, but not 100%. It's helpful to appreciate where we are and where we're headed. Hydro is about equal to natural gas, coal is not far behind and renewables are way behind. We're still getting 50% of our energy from thermal resources. What's the implication for peoples' wallets? Another implication is the regulatory and legislative risk for clean operators.

Quigley said the Clean Energy Transition Institute is an independent, nonpartisan Northwest research and analysis nonprofit organization with the mission to accelerate the transition to a clean energy economy.

Quigley said the group performed the deep decarbonization study, *Meeting the Challenge of Our Time: Pathways to a Clean Energy Future for the Northwest*, to provide a regionwide pathway to lower emissions. Several studies have been done, but this one is different because it's the first economywide study. Others just looked at the electricity sector, at one state or one utility. None looked at constraining biomass or the use of natural gas in transportation. Those are overarching differences.

Quigley tied her study's relevance to power planning and read the study's questions from her slide. In looking at their methodology, she said that an 86% reduction in energy-related CO2 emissions below 1990 levels by 2050 is needed to achieve the Northwest's deep decarbonization target. Only looking at electric generation is an incomplete look at deep decarbonization opportunities.

She added that the study was conducted before the most recent legislative session in Washington, which requires that 100 percent of the state's electricity come from clean energy sources by 2045.

Their study looked at eight different pathway scenarios:

1. Business as usual
2. Central case
3. 100% clean electricity grid
4. Limited electrification and efficiency
5. No new gas plants for electricity
6. Increased NW-CA transmission
7. Limited biomass for liquid fuels
8. Pipeline gas for freight vehicles

Some of the findings are:

- Electricity generation is moving to 100% clean without a specific mandate;
- Aggressive vehicle electrification and a highly efficient built environment powered by clean electricity are essential;
- Biomass would be primarily allocated to jet and diesel fuel;
- Thermal generation is important for reliability in periods of low hydro and renewable output (low capacity factor);
- New technologies and flexible electric loads combined with storage are likely to play key role producing pipeline fuels and balancing the grid; and

- Significant cost savings will be realized if the Northwest and California grids are better integrated.

The study deploys five decarbonization strategies: energy efficiency, electricity decarbonization, fuel decarbonization, electrification and carbon capture.

Member Anders asked if the energy efficiency graph identified opportunities for efficiency savings. Gabe Kwok said that among end uses, it calls for adopting the best, most-efficient equipment by 2025. Most efficiencies come from switching out combustion engine vehicles.

Quigley discussed an optimal decarbonization scenario, and the business as usual scenario versus the central case scenario.

Looking at the central case scenario's projection of the final energy demand, the overall end-use energy demand in 2050 is more than one-third below what it is today. Electricity consumption increases by more than 50% and comprises one-half of all end-use demand by 2050. Liquid fuels decrease from one-half of demand today to one-fifth by 2050 as on-road vehicles transition to electricity.

The central case scenario shows the addition of new wind and solar photovoltaic to decarbonize electricity generation and meet growing electricity demand. By 2050, wind generation nearly equals hydro generation. Gas-fired generation's share is about 4% in 2050, while coal-fired generation is eliminated. Nuclear is extended after 2043 and operates through 2050. The Northwest energy sector adds about 100 GWs of new resources under the central case.

Transportation electrification was discussed including diesel, jet and pipeline decarbonization.

In the 2040s, new, electric loads will have an essential role in grid balancing, Quigley said. These new loads will be flexible and produce coproducts. There was a discussion of net annual energy costs. Between 2020 and 2050, the costs of the central case pathway are 9.5% higher than the business as usual scenario.

The remaining pathway scenarios were discussed. Under the 100% clean electricity scenario, Quigley said the gap between that and the central case scenarios is much smaller than anticipated. Achieving 100% clean electricity is easier with economywide decarbonization.

The no new gas plants for electricity scenario means no new gas plants starting in 2020. Quigley said it calls upon additional energy storage and renewables that can provide

reliable supply. The cost of implementing it is managed by electric fuels using excess renewables, but it's about double the incremental costs of the central case.

The NW-CA transmission case explores how increased transmission between the two regions could achieve decarbonization at potentially lower costs. Kwok said we already have 8,000 MW of intertie and we'd add 4,500 MW. The expansion would alter optimal electricity portfolios in each region, avoiding the development of low-quality renewables. California is already committed to 100% carbon free resources, mostly from solar. It would export high-quality solar to the Northwest, and the Northwest would export high-quality wind to California. The net present value of savings across the study period is $11.1 billion; the higher transmission investment would be offset by resource cost savings.

Overall, the failure to electrify on the customer side has enormous implications for energy supply, Quigley said. The scale of the new wind, solar and other solutions would be prohibitive without electrifying as much as we need to. The restrictive availability of net-zero biomass has significant impacts on the system.

The bottom line is that deep decarbonization is achievable, she said. It depends how radically the energy system will transform. Instead of singular solutions, we're looking at multiple strategies at once that are in various stages of development. It will require enormous investment in research and development, and significant changes in policy to achieve with decarbonized future.

Another study implication is the need to severely limit natural gas in buildings, transportation and the grid.

Quigley said the next steps are to do additional runs on the model, including updating for the recently passed Washington legislation. They're also looking at their assumptions on hydro in the face of climate change, the use of nuclear, coal plant retirements and the cost of natural gas.

Member Devlin observed that the study shows what is possible, but not necessarily how to get there. You can't get to the levels without electrifying transportation. It's easy to put an achievement on paper, but hard in reality. Just to get to 50% would be difficult. I appreciate the study, but I don't see it as a roadmap, he said.

Quigley said she didn't try to convey it is easy. What we're saying is the model shows it's plausible and it seems necessary. Several of my colleagues in Idaho are excited about the study. The challenge is how to bridge that divide, figure out what we can do in the next 10 years and get on a better trajectory.

Member Ferrioli asked about the net annual cost graph showing the business-as-usual case and the 30-year window. Is that an annual cost? Kwok replied it is. Ferrioli said we're still arriving at a situation where no scenario succeeds without dispatchable power, which is natural gas. Kwok replied it doesn't have to burn natural gas.

Member Devlin said it's assumed the natural gas generation would come from biofuels or carbon sequestered from hydrogen. He asked if the $6 billion figure is in 2016 dollars. In the scenario, it jumps to $32 billion. Kwok said that electrification saves in the long run.

Quigley said it's one reason we froze natural gas. We didn't go into this knowing the answers. We just asked the questions.

Ferrioli said he wished wish there was some way to get the studies done after legislation passed.

Member Anders asked how their study jibes with the E3 study, saying that her take was that we can do it, but it becomes exponentially more expensive. Kwok replied that study looked at the electric sector and theirs looked at other sectors as well. Looking at the whole system helps manage the cost increases.

3. Presentation on End Goal Energy Planning

Starrett introduced Melissa Powers, Jeffrey Bain faculty scholar and professor of law, Lewis & Clark Law School. She addressed the Council on using end-goal planning instead of procedural planning.

The more we think about the end outcome, the more our plans will be more reliable and cost-effective, she said. There are technological innovations and policy changes, as well as the policy whiplash at the state and federal levels. Then environmental, climate and economic concerns will inevitably change our energy system. We have a chance to get ahead of it.

The idea is to change what is still dominated by the central power station model, Powers said. We need to move to where energy consumers are also energy producers, taking assets offline and putting new ones online. We know it's happening. Planning for it will be very hard. We are in a scenario where we need to decarbonize.

She mentioned the loss of ice in Greenland, rising sea levels and the need to reduce our global emissions. She said species are in peril and declines are linked to climate change. We will see more litigation on the dams' impact on salmon.

There has been great policy transformation. Many states adopted 100% clean energy targets. Then we have clean energy cities and counties, such as Portland and Multnomah County. Boise, Missoula and Spokane have also embraced the 100% clean goal.

Then there's policy whiplash: The federal government announced changes in the Endangered Species Act and repealed the Clean Power Plan. Policy debates will persist, no matter who's President. I don't envy anyone trying to plan for energy when the policy is in such swings, Powers said.

Another change is in the energy economics of renewables versus gas. A gas plant was taken offline because it's no longer economic to operate. Solar PVs under nonsubsidized scenarios are cheaper than natural gas.

She mentioned the changing economics of the dams and the continued debate and pressure on the Lower Snake River dams.

Planners decide what the energy system is going to look like, she explained. It allows for adjustments and changes on the ground. Adjustments in end-goal planning are dependent upon if they will help us get to where we want to be. It will help investments be locked in. We've seen bad investments happen under the least-cost framework. PGE admitted its investment in a gas plant wasn't as good because it didn't foresee policies changing as quickly as they have.

Long term planning is hard, she said, but it's the only way to get to where we want to be. For example, cars are being produced for the California market because they have ambitious policies.

Looking at incrementalism so far, we're currently not planning for a decarbonized energy system. Emissions are increasing. Conflicts between energy producers and resources exist. Stranded cost concerns are delaying decarbonization.

Powers recommends end-goal planning. That means that policymakers need to set the end goals, such as 100% carbon-free energy by a certain date. What will it take? Design the blueprint. It would be great if government agencies did this.

There will be options, so make choices and pick the pathways to pursue. For example, how much of the transmission system will be electrified versus natural gas or hydrogen?

We don't change the end goal unless something is proven to be wrong with it. Denmark has planned for 100% decarbonization for a long time. It's hard, but it's effective.

Member Devlin said different parties have different policies. On a lot of issues, people have partial authority. My first reaction is it's a real challenge. We have different entities with a piece, which complicates end-goal planning. We will need legislative reform to ensure a cohesive group steering these agencies in the right direction. On the flip side, absent that authority, the various agencies could come together and collaborate on an end-goal planning solution. Outside of nonprofits, I don't see planning agencies doing this. Help us understand the opportunities.

Member Ferrioli said we need to set new paradigms. Legislatures make bad bets. WPPSS was one of those. We're still paying for that. We may still go back to nuclear power. Goal-oriented planning might be inconsistent with democracy. There's no incentive for legislatures to take big risks. But we did get to the moon.

Powers said getting to the moon was end-goal planning. It involved a great deal of planning, expertise, money and failure. WPPSS is an example of bad policy, and it's not unique. There were 200 nuclear units, half of which failed, and then others were later scrapped. I don't think there's anything about government that makes it less capable of planning and ambitious models, she said. We could use reform, and they need to defer technical decisions to those shielded from the political pressures.

Member Ferrioli said shielding people from decisions is what I'm talking about with regard to democracy. The Council relies on all the inputs. The end goal is just the first step.

Member Yost said the Council has an end goal objective proscribed in the NW Power Act, created because people made stupid mistakes, and wanted people more measured in keeping lights on and fish and wildlife protected. The only thing I agreed with was that politicians should leave it up to technical people who know what they're doing. The push for decarbonization and doing away with fossil fuels is political and it takes away options for utilities. When people see what it will cost them, it's going to be painful. People won't want to pay three or four times more for energy without reliability. I don't think decarbonization is at odds with reliability, but it will cost more. We're all facing the consequences of climate change. The price for energy is acute. I think it helps to look at things as trade-offs.

Chair Anders recessed the meeting at 3:55 p.m.

Wednesday, August 14, 2019

Chair Anders called the meeting to order at 9:29 a.m.

4. **Council decision on recommendation to Bonneville on mainstem and program support project review**

Lynn Palensky, manager, project review, asked the Council to approve a set of project recommendations to move to BPA for funding. There are four parts to the recommendation:

1. Background and summary
2. Programmatic issues
3. Project-specific recommendations
4. Summary spreadsheet

It was a team effort of the Fish and Wildlife staff. The set of 48 projects total $43 million in program funding. The projects are varied: mainstem, research, large data and information depositories, lamprey, ocean, predation, enforcement, chum and large-scale habitat. This is the second of four sets. The first was wildlife. This is mainstem. The next is resident fish and sturgeon. Then a year from now is the anadromous and hatchery review, which will be the largest. We'll have well over 100 projects in the anadromous section. These have broad applications. It's a nine-month process from start to finish. BPA's Scott Donahue helped, as did Council staff and sponsors. There were some delays due to the government shutdown.

Palensky shared the history of the science review. The ISRP recommendations are reflected. She explained what they look at, including the science. There's a focus on program performance. Many have been reviewed many times. Another key theme is coordination throughout the basin. There is a focus on increasing communication between the different people doing the work.

The recommendations some aren't in a specific timeframe. In most cases, the review is good through the next review cycle. Some will go through master planning process. We've asked for some interim reports to help determine future funding, Palensky said.

Going through the memo, Palensky said that with any review, we open public comment on the ISRP reports. Often, the ISRP review is final. Public comment closed July 26. No comments were received.

Looking at the spread sheet and funding level: In the past, Council has recommended specific project budgets. We've also had less specific budget recommendations. Page 19 has the spreadsheet. We're recommending a planning budget. We used the one-year budget average to reflect the Council's planning budget.

Palensky said they put together a Council planning budget that reflected sponsor requests. We're recommending the total Council planning budget to fund $43.4 million, she said. With that comes expectations, which are on pages 3 and 4.

We have a disclaimer since we're amending the Fish and Wildlife Program, giving us the latitude to revisit these recommendations.

Palensky said if there's a scope change exceeding 5%, that's a starting point for deciding if a project needs to come back for a review.

Part 2: Programmatic issues

When the ISRP writes a report, they often have large observations. In the mainstem report, there were 11. We address them all, but not necessarily individually. The Council can add their own programmatic issues as well.

Palensky listed the four they ended up with:

1. Hatchery-related work: This addresses the need to communicate more between the managers and researchers to address lingering issues. The Council will continue to work with the informal hatchery workgroup.

2. Data management: Nancy Leonard, program performance manager, said the Council will convene a Data Management and Information subcommittee. The committee will focus on what the database do, what we want to leverage, and what needs to happen over five years to be better situation to report on program performance. It will engage all our partners and bring greater transparency.

3. Research tracking: We promised to track the research and sponsors will submit a draft annual report.

4. Council staff will work with BPA to improve the connections between the proposal objectives with the final contract scope of work to improve tracking; and hold a webinar for sponsors on developing objectives and an adaptive management plan.

Part 3: Palensky listed project-specific recommendations:

1. Ocean survival of salmonids.
2. PIT-Tag operations and maintenance, and research and development projects.
3. The Columbia Basin Water Transactions project.
4. Fisheries conservation enforcement projects.
5. Funding the Columbia Basin Bulletin.
6. Yakama action effectiveness monitoring.
7. Up to 14 proposed project name changes.

Member Devlin asked that if we highlighted a concern in the addendum, highlighted it again in the project review and the ISRP highlighted it, if administrator did not react to the recommendation, would it be a case of the administrator not being consistent with the plan?

Shurts said on the whole, we analyze BPA's consistency across a wide range of things, not specifically project by project. In the fish passage case, if Bonneville does not follow the Council's recommendation, we want a reason in writing.

Member Anders said this issue has been well-aired in committee.

Member Yost asked if all of these considered research projects are RM&E? When we fund coastal salmon in Idaho, NOAA recommends we have 10% for research and monitoring. Is there any idea what the percentage is in these projects?

Palensky replied that we have nine projects that are primarily research. There are research and monitoring elements in nearly all the projects. Yost said some aren't marked research but seem like a good portion of the project is. We use the percentage in Idaho for assessments.

Member Anders asked for a breakdown from staff.

Mark Fritsch, program implementation manager, said staff is trying to develop a form to track it.

Member Yost said he's fine as long as we get a closer look at that.

Northwest Power and Conservation Council Motion to Recommend that Bonneville Support Mainstem and Program Support Project Review Recommendations

Member Devlin moved that the Council recommend to the Bonneville Power Administration the set of mainstem and program support project review recommendations presented by staff and recommended by the Fish and Wildlife Committee with an annual average planning budget of $43.5 million.

Member Norman second.
Motion approved without objection.

5. **Update on Fish and Wildlife Program outreach schedule**

Laura Robinson, program analyst and tribal liaison, said they put out the addendum for public comment on July 19. People can comment on the Council's website, via email, or at a meeting. Robinson reviewed the list of upcoming hearings with the Council. The first was held yesterday in Portland. She thanked the Council Members for attending. Five people came and commented. Council members are encouraged to attend meetings outside of their state. Council members are encouraged to reach out and have consultations with

interested parties. At the regional coordination forum, they had a robust discussion with the coordinators. Staff will schedule a briefing on program progress and indicators with the regional coordinators.

Public comment is open until October 18. It doesn't mean public comment is over. We'll still take it, but we'll be working to revise the draft addendum, Robinson said.

6. Council Business

Northwest Power and Conservation Council Motion to Approve the Minutes of the July 16-17, 2019, Council Meeting

Member Devlin moved that the Council approve for the signature of the Vice-Chair the minutes of the July 16-17, 2019, Council Meeting held in Portland, Oregon.

Member Yost second.
Motion approved without objection.

Northwest Power and Conservation Council Motion to Approve the Extension of Council Contract 2019-04 with Energy 2020 to September 30, 2019, in Order to Address Long-Term Load Forecasting Model Updates in Preparation for the 2021 Power Plan

Member Devlin moved that the Council approve the extension of contract 2019-04 with Systematic Solution Inc. for the Energy 2020 modeling capability to September 30, 2019, in an amount not to exceed $38,000 to update the Council's long-term load forecasting capability in preparation for the 2021 Power Plan, as presented by staff.

Member Yost second.
Motion approved without objection.

Northwest Power and Conservation Council Motion to Approve the Appointment of Tom Quinn to the Independent Scientific Review Panel for a Term of October 1, 2019, to September 30, 2022; and Approve the Renewal of Stan Gregory's ISRP Membership for a Second Term, through September 30, 2023

Erik Merrill, independent science manager, said each has been screened and meet scientific credentials. They have no conflicts and both have been valuable contributors.

Member Devlin moved that the Council approve the appointment of Tom Quinn to the Independent Scientific Review Panel for a term of October 1, 2019, to September 30, 2022;

and approve the renewal of Stan Gregory's ISRP membership for a second term, through September 30, 2023.

Member Norman second.
Motion approved without objection.

Northwest Power and Conservation Council Motion to Approve the Contract with Tom Eckman for Services During Fiscal Year 2020 in an Amount Not to Exceed $48,400, Including Travel Expenses

Ben Kujala: our former division director. Does a lot of coverage in D.C. Kevin Smit transitioning, but still some work to finish up this year.

Member Devlin moved that the Council approve a contract with Tom Eckman for support and advisory services during Fiscal Year 2020 in an amount not to exceed $48,400, including travel expenses, as presented by staff.

Member Oshie second.
Motion approved without objection.

Northwest Power and Conservation Council Motion to Amend Contract C2019-29 with Gwendolyn Shearer for Testing the Redeveloped Genesys Model in an Amount Not to Exceed $11,250, Bringing the Total Budget to $86,250; and Approve a Contract with Gwendolyn Shearer for Fiscal Year 2020 to Continue Vetting the Redeveloped Genesys Model and to Aid in Preparing and Running Analyses to Develop the 2021 Power Plan, Beginning October 1, 2019, through September 30, 2020, in an Amount Not to Exceed $75,000

Ben Kujala, Power Division director, said Shearer is an expert on GENESYS and is helping transition to the new model. It's a critical part of what we're doing.

Member Devlin moved that the Council approve amending contract C201-10 with Gwendolyn Shearer for testing the redeveloped GENESYS model in an amount not to exceed $11,250, bringing the total budget to $86,250; and approve a new contract with Gwendolyn Shearer for Fiscal Year 2020 to continue vetting the redeveloped GENESYS model and to aid in preparing the running analyses to develop the 2021 Power Plan, beginning October 1, 2019 through September 30, 2020, in an amount not to exceed $75,000, both as presented by staff.

Member Yost second.
Motion approved without objection.

Northwest Power and Conservation Council Motion to Approve a Letter to the U.S. Army Corps of Engineers in Support of the Draft Finding of No Significant Impact and Environmental Assessment for Aquatic Invasive Mussel Control Rapid Response Plan

Mark Walker, Public Affairs Division director, said this pertains to letter of support for the U.S. Army Corps of Engineers letter. The Corps did an environmental assessment on watercraft inspection stations. Legislation was passed in 2014. The statute was amended in 2016 and a rapid response was authorized. But this encourages the Corps to get this done to make sure funds are available.

Member Yost said he supports sending the letter. There are concerns in Idaho that the Corps is slower than molasses in taking any kind of action. Who has the primary lead with the waters in the state: state agency or corps? Idaho is protective of its water, but there's a concern about who has control of the stream beds. I don't want to adjust the letter, he said, but they are concerns.

Member Devlin moved that the Council approve the letter to the U.S. Army Corps of Engineers in support of the Draft Environmental Assessment and Finding of No Significant Impact for a rapid response plan for the control and prevention of a potential zebra and quagga mussel infestation in the Columbia River Basin, as presented by staff.

Member Norman second.
Motion passes without objection.

Report on disclosure of earned outside income

Shurts said there's a provision in bylaws to file financial disclosure forms. Member Ferrioli has rents and Member Oshie has fees for work, but he's backed away from those since he became a Member.

Northwest Power and Conservation Council Motion to correct the approved July Minutes

Member Devlin moved that the Council reconsider the motion passed previously, and that the Council approve for the signature of the Vice-Chair the minutes of the July 16-17, 2019, Council Meeting held in Butte, Montana.

Member Ferrioli second.
Motion approved without objection.

6. Presentation by Portland General Electric on their IRP and recent Demand Response Efforts.

John Ollis, power system analyst, introduced Shauna Jensen, Portland General's (PGE) smart grid planning engineer; and Jason Salmi Klotz, PGE's manager of regulatory and policy strategy, grid architecture, integration and system operations.

Klotz cited some quick facts on PGE. It has nearly 863,000 customers and only 12% of its load is commercial/industrial. Although its service area is geographically compact, it serves 44% of the state's population.

Jensen provided an IRP overview. PGE's 2019 IRP Themes are to:

- Engage customers in new technologies and programs (through energy efficiency and distributed flexibility);
- Cost effectively decarbonize its energy supply; and
- Embrace clean technology while maintaining reliability.

PGE's IRP action plan has three main categories:

1. Acquire all cost-effective energy efficiency (157 MWa by 2025).
   Acquire all cost-effective & reasonable distributed flexibility (values by 2025).

2. Conduct a renewables RFP in 2020 (about 150 MWa of RPS-eligible resources, online by end of 2023).

3. Pursue staged procurement process to secure capacity to maintain resource adequacy, while considering the impact of uncertainties.

Member Devlin asked, on energy efficiency and the 141 MW by 2025, how does that compare to your previous five years? It's a steep ramp up, Jensen replied. We feel we've learned a lot as an industry to move a little faster than we have in the past. The energy efficiency figure comes from the Energy Trust. Klotz said their prior IRP set a goal of 77 MW in the winter and 69 MW in the summer by 2021, so this is a steep ramp.

Member Devlin asked if there's anything in this IRP that reflects a change in PGE's agreement with Bonneville. Jensen said we're seeing a shift in portfolio optimization. Renewables win in a lot in our portfolio interactions. In terms of new procurement, it was an economic driver.

Jensen shared their methodology to forecast of need – explaining their charts and how they arrived at the data.

For demand response, they conducted a study with Navigant. Jensen said they took the targets from 2016 and set that as a baseline for near-term actions. Then they layered on their own models of PGE demographics, external market sensitivities, and operational characteristics and limitations of the programs. They also factored in demand response program interactions. If a large amount of batteries came online, that could impact demand response. One interactive sensitivity that drove the late-term demand response trajectory was an uptick in electric vehicle adoption. We have a steep incline through 2022, which levels off at 2023. Long term, the steepness of the forecast is highly correlated with electric vehicles. Without a lot of electric vehicles online, we stagnate with demand response in the long term.

Jensen then reviewed Navigant's various demand response categories.

Klotz talked about what's driving PGE's development of demand response. It's not as accelerated as in other states with more-costly power, such as New York and California. There was a call for 600 MW of demand response in the last IRP. That target influenced commission staff's assessment on what was available. That informed the determination that PGE should acquire all cost-effective demand response and energy efficiency. Then, Oregon passed SB1547, calling for 50% renewables by 2040 and retiring coal by 2030. Oregon also passed the Energy Storage Mandate (HB 2193), calling for at least 5 MWh up to 38.7 MW by 2020.

Klotz talked about balancing challenges, noting that renewable generation exceeds load in 46% of all hours in a typical year. Hydro has filled the gap well, but in the future, it can't be the only resource to fill that gap.

PGE's goal is to acquire 77 MW of winter demand response, 38 MW of battery generation, 135 MW of diesel backup generation. PGE is attempting to pilot full-scale flexible load and DER. The question is how to get customers to engage. Across the country, DR comes from large industrial, he said. We don't have those. We have to get it from residential. Just 6% of customers across the country participate in demand response — we need better than that.

He said the company's target is 66% customer participation in the utility's distributed flexibility programs. In putting together their program, PGE has guiding design principles. They want to ensure all customers to have at least one program. They don't ask customer to sacrifice. They want to pay customers for what they can control and have a peak-time rebate program. They have 42,000 residential customers who have opted in to the program.

PGE's offerings include a peak-time rebate program being used by a demand response test group of 14,000 residential customers. PGE pays them $1 per kWH to reduce usage. If they don't participate, they stay on their normal rate. There is a multifamily water heater program that uses the appliances for intra-hour demand response. They hope to expand it to a residential water heater program.

PGE's 2019 timetable also looks to expand its smart thermostat programs, and it has 21 MW in their commercial/industrial Energy Partner program. They plan to roll out 500 residential battery units this year — some customer-owned. In addition, it has a clean fuels program for electric vehicles with a demand response component.

Member Oshie asked about economic efficiency. Even at a dollar per kWh, is demand response still less expensive than the diesel generators you're running? Our cost-effectiveness methodology compares it to the next marginal resource we'd have to purchase to meet that load, Klotz said. In our 2016 IRP and present methodology, that's a gas plant. What happens in the 2019 IRP will help us determine on a system level what that next marginal resource is. The commission would not allow these to go into place unless they demonstrated cost effectiveness. Not all demand response resources are created the same. Some are only available to us a certain number of hours out of the year, such as thermostats, while water heaters are available all hours out of the year. We're working to model those to inform our cost effective methodology.

Member Oshie said he assumes customers participate because they see a value on their bill. Klotz said he assumes they are participating because they can better manage their overall energy bill.

Member Oshie asked what's the penetration of demand side generation? Klotz replied The IRP models what's on our system and what's expected from PV rooftops. We'd like to offer customers whole packages for PV programs. It makes sense to offer whole packages for entire energy management options.

Member Devlin had a question about attending an OPUC meeting on adequacy. There a PGE representative spoke favorably about pump storage. I see in the proposal that 37 MW is batteries and 200 MW is pump storage, available by 2024 or 2025. There are two projects in the region under consideration. Has PGE decided to go in that direction?

Jensen said pump storage did well in their models. Project developers could participate in our capacity RFP, realizing that the lead time is long and multiple parties would be involved. It's a bridge to cross when we get to it.

Public comment on any issue before the Council
None

Chair Anders adjourned the meeting at 11:48 a.m.

Approved September ___, 2019.

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Vice-Chair